

**BODY IMAGE AND
WEIGHT MANAGEMENT:
YOUNG PEOPLE,
INTERNET ADVERTISEMENTS
AND PHARMACISTS**

Kanokrat Luevorasirikul, BSc.

**Thesis submitted to the University of Nottingham
for the degree of Doctor of Philosophy**

March 2007

ABSTRACT

Media promotion of the ideal body as slimness for women and muscularity for men, has led to increasing numbers of both genders reporting dissatisfaction with their bodies and trying to change using weight control products. It has been suggested that pharmacists can play a key role in promoting healthy lifestyles and weight management.

The main aim of the research study was to examine the impact of media on body image perception and to investigate the role of pharmacists in weight management. This thesis consists of three studies: an evaluation of weight control websites, a body image survey of young adults and interviews with pharmacists.

The results from the evaluation study showed that the quality of most weight loss (64%) and weight gain product advertisements (80%) was generally poor, principally due to the use of misleading claims and a lack of useful information. These data complement the survey that university students reported rarely being influenced by weight control product adverts and hardly considered using these products as a method for changing weight. The survey also showed that most participants of both genders (71%) felt satisfied with their body image. However, the findings in this study indicated that there was a relationship between a high level of body image concern and self-perception of being overweight and the attempt to lose weight. Interviews with pharmacists showed that they were unlikely to be actively involved in reducing obesity problems and promoting healthy lifestyles in the community.

Although the prevalence of body dissatisfaction and the use of weight control products among these young adults may not be as high as has been reported elsewhere, healthcare professionals, including pharmacists, need to be aware of this problem when providing advice or consultations for young adults. Healthcare professionals should promote the benefits of healthy lifestyles as well as providing information about potential problems of harmful weight control strategies. The effect of ethnicity and culture on body image concern warrants further. The availability of weight control products and quality of information provided should also be further examined.

PUBLICATIONS AND PRESENTATIONS FROM THESE STUDIES

Paper

Luevorasirikul K, Gray NJ, Anderson CW. Developing a consumer evaluation tool of weight control strategy advertisements on the internet. *Health Education Research* (in press) (see Appendix 13).

Published abstracts

Luevorasirikul K, Gray NJ, Anderson CW. An interview study of influence of the media on body image in university students. *International Journal of Pharmacy Practice* 2006;14:042;A33.

Luevorasirikul K, Boardman HF, Anderson CW, Gray NJ. The influence of idealized media images on body image attitudes: Differences between home and international students. *Proceedings of the British Psychological Society* (in press).

Luevorasirikul K, Anderson CW, Boardman HF, Gray NJ. Body image concern among first-year university students: A study in the UK. *Proceedings of the British Psychological Society* (in press).

Luevorasirikul K, Anderson CW, Boardman HF. Body image perception and the use of weight control methods among university students. *International Journal of Pharmacy Practice* (in press).

Unpublished presentations

Luevorasirikul K, Gray NJ, Anderson CW. An evaluation of weight control product advertisements on the internet. Poster presentation at the 11th Health Services Research and Pharmacy Practice Conference, April 2005.

Luevorasirikul K, Anderson CW, Gray NJ. A qualitative study of body image perception and sociocultural influences on changing body shape. Presentation as guest speaker at the Cross-Disciplinary Research Group at the University of Nottingham, March 2005.

Luevorasirikul K, Gray NJ, Anderson CW, Boardman HF. A study of UK students' attitudes towards body image and weight control products. Poster presentation at the 12th Health Services Research and Pharmacy Practice Conference, April 2006.

Luevorasirikul K, Boardman HF, Anderson CW. Community pharmacists' perspectives on weight management services. Poster presentation at Preliminary event for UK GRAD Programme Midlands Hub Regional Poster Competition, May 2006.

Luevorasirikul K, Gray NJ, Anderson CW. An interview study of influence of the media on body image in university students. Oral presentation at International Social Pharmacy Workshop, July 2006. (I received Highly commended award for oral presentation)

Luevorasirikul K, Boardman HF, Anderson CW, Gray NJ. The influence of idealized media images on body image attitudes: Differences between home and international students. Poster presentation at the 9th Annual Division of Health Psychology Conference, September 2006.

Luevorasirikul K, Anderson CW, Boardman HF, Gray NJ. Body image concern among first-year university students: A study in the UK. Poster presentation at Appearance Matter 2 Conference, June 2006 and Research Adolescent Health: What Works?, November 2006.

Luevorasirikul K, Anderson CW, Boardman HF. Body image perception and the use of weight control strategies among university students. Oral presentation at the 13th Health Services Research and Pharmacy Practice Conference, April 2007.

ACKNOWLEDGEMENTS

I would like to thank Professor Claire Anderson, Dr. Helen Boardman and Dr. Nicola Gray for their advice, comments and support throughout this study.

I also thank all my friends in Nottingham, especially Somying Puntong and Waraporn Rattanongphisat for invaluable advice and support over the last few years.

I give a special thank you to Paul Jenner, who has been kindly proofread this thesis.

I am also grateful to all the people who have given their time and effort for helping and giving direction in every step of this research.

Additionally, I would like to thank all the participants in this study particularly first-year undergraduate students in University of Nottingham and pharmacists in Nottingham City area, without them this research would not have occurred.

Finally, I would like to dedicate this thesis to my family: Viroj, Kannika, Nattawat and Nattawong Luevorasirikul, who always support and encourage me not giving up hope to finish this thesis.

CONTENTS

ABSTRACT	ii
PUBLICATIONS AND PRESENTATIONS FROM THESE STUDIES.....	iii
ACKNOWLEDGEMENTS	v
CONTENTS	1
LIST OF TABLES.....	10
LIST OF FIGURES	14
LIST OF APPENDICES	16
LIST OF GLOSSARY TERMS	17
1. AN OVERVIEW OF BODY IMAGE RESEARCH.....	18
1.1 Literature review search strategy	18
1.2 Definitions of body image	19
1.3 Body image concern and its consequences.....	19
1.4 Theories of body image dissatisfaction	21
1.4.1 Personal control belief and body dissatisfaction.....	21
1.4.2 Self-discrepancy Theory.....	21
1.4.3 Self-Schema Theory.....	22
1.4.4 Objectification Theory	23
1.4.5 Feminist Theory.....	23
1.4.6 Cognitive-Behavioural Model	24
1.5 Summary.....	25
2. BODY IMAGE CONCERN ACROSS LIFESPAN.....	26
2.1 Pre-adolescence.....	26
2.2 Adolescence	29
2.3 Young adulthood.....	33
2.4 Adulthood	39
2.5 Summary.....	39
3. FACTORS AFFECTING BODY IMAGE CONCERN	40
3.1 Biological factors	40
3.1.1 Gender.....	40

3.1.2 Age.....	42
3.1.3 Body Mass Index (BMI)	44
3.1.4 Ethnicity	46
3.2 Psychological factors.....	49
3.2.1 Self-esteem.....	49
3.2.2 Negative affect	50
3.3 Interpersonal influences.....	50
3.3.1 Family	50
3.3.2 Peers.....	52
3.4 Environmental and cultural factors	53
3.4.1 Socio-economic status	53
3.4.2 Media influence	54
3.5 Summary.....	55
4. GROUPS AT A HIGHER RISK	56
4.1 Eating disorders.....	56
4.2 Body dysmorphic disorder.....	57
4.3 Athletes.....	58
4.4 Exercisers.....	58
4.5 Homosexuality	59
5. THE MEDIA AND ITS EFFECT ON BODY IMAGE.....	60
5.1 Introduction.....	60
5.2 Theories related to the effect of the media	61
5.2.1 Sociocultural Theory	62
5.2.1.1 The cultural body ideal	62
5.2.1.2 The emphasis of appearance on gender role	63
5.2.1.3 The importance of appearance for societal success.....	64
5.2.1.4 The effect of media on the individual's perception of the ideal body image	64
5.2.2 Social Comparison Theory	66
5.2.3 Cultivation Theory	68
5.2.4 Absorption-addition Theory	68
5.2.5 Social Learning Theory.....	69
5.2.6 Integration Theory.....	69

5.3 Studies of the media's effect on body image.....	69
5.3.1 Who is affected by the media?.....	69
5.3.2 The effect of exposure to the cultural body ideals on body image	71
5.3.3 The effect of exposure to magazines and television on body image	72
5.3.4 The effect of magazine reading on weight control behaviours.....	74
5.4 Summary.....	75
6. WEIGHT CONTROL PRACTICES	76
6.1 Reasons for changing weight.....	76
6.2 Prevalence of weight change practices among young adults.....	77
6.2.1 Healthy weight control strategies.....	78
6.2.2 Unhealthy weight control strategies.....	80
6.3 Weight change strategies in other age groups	81
6.3.1 Children.....	81
6.3.2 Adolescents.....	82
6.3.3 Adults	89
6.4 Problems of weight loss strategies	93
6.4.1 Weight loss products.....	93
6.4.2 Very Low Calorie Diets (VLCD)	94
6.4.3 Group meetings.....	94
6.4.4 Weight loss diets.....	94
6.4.5 Weight loss programmes	95
6.4.6 Pharmacological and surgical interventions for weight loss	95
6.5 Problems in weight gain products.....	96
6.5.1 Steroid products	96
6.5.2 Other ergogenic products	96
6.5.3 Ephedra products	98
6.6 Summary.....	98
7. WEIGHT CONTROL STRATEGY ADVERTISEMENTS.....	99
7.1 Trend of weight change strategies on the Internet	99
7.2 Regulations and guidelines for weight control product advertisements.....	100
7.2.1 Background.....	100
7.2.2 Weight loss advertisements	100
7.2.3 Weight gain advertisements.....	102

7.3 Problems of weight loss product advertisements.....	103
7.4 Problems of bodybuilding product advertisements.....	108
7.5 Summary.....	110
8. PHARMACISTS AND WEIGHT CONTROL STRATEGIES.....	111
8.1 The problem of obesity.....	111
8.2 Pharmacist's role in obesity management.....	111
8.3 Studies of pharmacy interventions related to weight management.....	113
8.4 Summary.....	115
9. AIMS AND OBJECTIVES.....	116
10. INTRODUCTION TO THE STUDY.....	118
11. PART 1: EVALUATION OF WEIGHT CONTROL PRODUCT ADVERTISEMENTS ON THE INTERNET.....	121
METHODOLOGY.....	122
1. Rationale for developing rating scores for consumer use.....	122
2. Development of evaluation tools for weight control product advertisements.....	123
3. Content analysis of advertisements on the Internet.....	125
3.1 Identification of websites.....	125
3.2 Website evaluation.....	126
4. Data analysis.....	127
5. Validity and reliability of the scoring tools.....	127
5.1 Validity of the tools.....	127
5.2 Reliability of the tools.....	128
RESULTS.....	129
1. Analysis of weight control websites.....	129
1.1 Weight loss strategies.....	129
1.1.1 Dimensions 1 and 2: Mode of action and benefits.....	130
1.1.2 Dimensions 3 and 4: Safety and risks.....	130
1.1.3 Dimension 5: Useful information.....	131
1.1.4 Dimension 6: Scientific proof.....	131
1.1.5 Dimension 7: Misleading information.....	132
1.1.6 Dimensions 8 and 9: Areas of uncertainty and instructions for consumer.....	133

1.2 Weight gain or bodybuilding strategies	133
1.2.1 Dimensions 1 and 2: Mode of action and benefits.....	134
1.2.2 Dimensions 3 and 4: Safety and risks	134
1.2.3 Dimension 5: Useful information	135
1.2.4 Dimension 6: Scientific proof.....	135
1.2.5 Dimension 7: Misleading information	136
1.2.6 Dimensions 8 and 9: Areas of uncertainty and instructions for consumer	136
2. Reliability test.....	136
2.1 Test-retest reliability.....	136
2.2 Inter-coder reliability	137
DISCUSSION.....	138
1. Summary of findings.....	138
2. Strengths and limitations.....	138
3. Comparison with other related studies.....	139
4. Implications of the study	140
5. Further studies	141
SUMMARY	141
12. PART 2: A STUDY OF BODY IMAGE VIEWS AND INFLUENCES AMONG FIRST YEAR UNIVERSITY STUDENTS.....	142
METHODOLOGY	143
Survey of first year university students	143
1. Rationale for questionnaire use	143
2. Developing the survey	143
Part 1: Body image.....	144
Part 2: Concerns about body image	145
Part 3: Weight change behaviours.....	147
Part 4: The influence of the media	147
Part 5: Parental influences	148
Part 6: Peer pressure	148
Part 7: The effect of advertisements.....	149
Part 8: Weight control products	149
3. Reliability and validity of the questionnaire	149

4. Distribution process	150
5. Statistical analysis	150
Introduction to qualitative research	153
1. The nature of qualitative research.....	153
2. Differences between qualitative and quantitative research	153
3. Essential criteria for conducting qualitative research	154
3.1 Sample selection.....	154
3.2 Methods for data collection	154
3.3 Data analysis	155
3.4 The place of study	155
4. Reliability and validity of the qualitative research	156
4.1 Triangulation.....	156
4.2 Measures of trustworthiness	156
4.2.1 Credibility.....	156
4.2.2 Transferability.....	157
4.2.3 Confirmability.....	157
4.2.4 Dependability.....	157
4.3 Reflexivity.....	157
4.4 Social desirability bias.....	158
4.5 The Hawthorne effect	158
4.6 Attention to negative cases	158
4.7 Fair dealing	158
5. How qualitative complements quantitative study?	158
Interviews with first year university students	160
1. Rationale for conducting interviews with university students	160
2. Developmental stage of the interview schedule	160
2.1 Developing questions for the interviews	161
2.2 Pilot study	161
2.3 Finalising the interview schedule.....	162
3. Recruitment of the participants.....	163
4. The interview process	163
5. Credibility and dependability of the study	164
6. Data analysis.....	164
RESULTS.....	167

Part 1: Survey study.....	167
1. Characteristics of respondents.....	167
2. Perspectives of body image.....	169
2.1 Body image perception.....	169
2.2 Body dissatisfaction.....	171
2.3 Body parts dissatisfaction.....	174
2.4 Body image concern.....	176
3. Weight change behaviours.....	180
3.1 Prevalence of changing weight.....	180
3.2 Time of the last attempt to change weight.....	182
3.3 Weight change strategies.....	183
3.4 Weight change achievement and maintenance.....	186
4. The effects of sociocultural influences.....	189
4.1 The media.....	189
4.2 Parents.....	192
4.3 Peers.....	196
4.4 Sociocultural influences and body image concern.....	199
5. Weight control product advertisements.....	202
5.1 Sources of weight control advertisements.....	202
5.2 The effect of advertisements.....	205
5.3 Types of weight control advertisements.....	206
6. Weight control products.....	209
6.1 Reasons for purchasing weight control products.....	209
6.2 The use of weight control products.....	211
7. Summary of findings.....	214
Part 2: Interview study.....	215
1. Body image Attitudes.....	216
1.1 Body satisfaction.....	216
1.2 Body areas dissatisfaction.....	216
2. Experiences of trying to lose or gain weight.....	217
2.1 Attempts at dieting and losing weight.....	217
2.2 Experiences of muscle gain.....	218
3. Reasons for changing weight.....	218
4. Attitudes towards some specific weight loss strategies.....	219

5. Perceived influences on body image concern	220
6. Influences from sociocultural factors: - The media, family and friends	220
6.1 Media influences on body image	220
6.1.1 The influences of celebrities	221
6.1.2 Weight control products' advertisements	223
6.2 Parental influences	224
6.3 Peer pressure	226
7. Sources of weight change information	227
8. Experiences of weight change strategies	229
8.1 Experience from family members	229
8.2 Experience from friends	230
9. Summary of key findings	230
DISCUSSION	231
1. Summary of the findings	231
2. Strengths and limitations of the study	231
3. Comparison with other related studies	235
4. Implications of the study	241
5. Further studies	243
SUMMARY	244
 13. PART 3: A STUDY OF PHARMACISTS AND THEIR ROLE IN WEIGHT CONTROL STRATEGIES	 245
METHODOLOGY	246
1. Rationale for interview use	246
2. Developing the interview schedule	246
3. Recruitment of the participants	246
4. The interview process	247
5. Credibility and dependability of the study	247
6. Data analysis	248
RESULTS	249
1. Opinions about weight management services	249
2. Views on weight loss strategies	251
3. Pharmacists' involvement in obesity management	251
DISCUSSION	254

1. Summary of key findings	254
2. Strengths and limitations of the study.....	254
3. Comparison with other related studies.....	255
4. Implications of the study.....	255
5. Further studies	256
SUMMARY	256
14. SUMMARY OF DISCUSSION	257
1. Summary of key findings	257
2. Implications for young adults	258
3. Implications for research	259
4. Implications for healthcare professionals and health policy	259
5. Further research	261
BIBLIOGRAPHY	262
APPENDICES	290

LIST OF TABLES

Table 1: Summary of studies on body image concern among children	27
Table 2: Summary of studies on body image concern among adolescents.....	30
Table 3: Summary of studies on body image concern among adults of all ages.....	35
Table 4: Summary of studies on weight control practices in adolescents	83
Table 5: Summary of studies on weight control practices in adults	90
Table 6: Serious side effects of ingredients found in weight loss products	93
Table 7: Characteristics of slimming websites (n=50)	104
Table 8: Problematic claims in slimming advertisements in the UK	105
Table 9: Nine types of problematic claims in weight loss product advertisements .	107
Table 10: Claims mentioned in 311 food supplement products.....	108
Table 11: Nine dimensions in evaluation tools	124
Table 12: Key terms for searching weight control product websites	126
Table 13: Characteristics of weight loss products.....	129
Table 14: Categories of bodybuilding products found in 50 sites.....	133
Table 15: Levels of strength of the correlation coefficient (r) value	152
Table 16: Age distribution of respondents (n=386).....	167
Table 17: Age group and gender of respondents (n=393)	167
Table 18: Distribution of the respondents by faculties and genders.....	168
Table 19: Satisfaction with appearance by gender and age group (n=392)	169
Table 20: Frequency and percentage of male respondents rating current and ideal body image	171
Table 21: Frequency and percentage of female respondents rating current and ideal body image	172
Table 22: The comparison of current and ideal body image among women across age groups.....	172

Table 23: Body image discrepancy among respondents.....	173
Table 24: Body image discrepancy score for men across four faculties, percentage reporting each level.....	173
Table 25: Body image discrepancy score for women across four faculties, percentage reporting each level.....	174
Table 26: Frequency and percentage of respondents reporting a body part as “ <i>like the most</i> ”	175
Table 27: Frequency and percentage of respondents reporting a desire to alter each body part.....	175
Table 28: Frequency and percentage of respondents across age groups reporting dissatisfaction with body parts	176
Table 29: Mean scores of body image concern by gender and age group	177
Table 30: Frequency and percentage of cases in BSQ categories by gender and age group	177
Table 31: A comparison between body image concern and body image discrepancy	179
Table 32: A comparison between body image concern and perception of current body image	179
Table 33: A comparison between body image concern and perception of ideal body image	179
Table 34: Frequency and percentage of respondents in each age group reporting trying to change their weight	180
Table 35: Comparison between dieting and current body image perception.....	181
Table 36: Frequency and percentage of respondents reporting time of the last attempt to change weight	182
Table 37: The use of weight change strategies among respondents (n=243).....	183
Table 38: Prevalence of weight control strategies by percentage of respondents in each faculty.....	186
Table 39: Weight change achievement reported by respondents	186

Table 40: Weight change maintenance reported by respondents	188
Table 41: Descriptive analysis for SATAQ factors by gender.....	190
Table 42: Descriptive analysis for SATAQ factors by level of body image concern	191
Table 43: Descriptive analysis for SATAQ factors by age group.....	191
Table 44: Mean and Standard Deviations for Parental Influences Scores by gender	193
Table 45: Mean and Standard Deviations for Parental Influences Scores by level of body image concern	194
Table 46: Mean and Standard Deviations for Parental Influences Scores by age group	195
Table 47: Descriptive data of peer pressure scores among respondents.....	196
Table 48: Descriptive data of peer pressure scores by gender	197
Table 49: Descriptive data of peer pressure scores by age group	197
Table 50: Descriptive data of peer pressure scores by level of concern.....	198
Table 51: Mean scores of respondents in each faculty in the factor ‘friends’ talks .	198
Table 52: Correlations among sociocultural variables and body image concern among men and women.....	200
Table 53: Frequency and percentage of respondents in each age group encountering weight control advertisements in each media.....	203
Table 54: Frequency and percentage of respondents by level of concern encountering weight control advertisements in each media.....	203
Table 55: Frequency and percentage of respondents seeing each type of weight control advertisement.....	206
Table 56: Reason for purchasing weight control products by gender (percentage within each group)	210
Table 57: Reasons for purchasing weight control products by age group (percentage within each group)	210

Table 58: Reasons for purchasing weight control products by level of concern (percentage within each group)	211
Table 59: Characteristics of the pharmacies	249

LIST OF FIGURES

Figure 1: A cognitive-behavioural model of body image concern.....	25
Figure 2: The proposed model of factors affecting body image concern	40
Figure 3: The proposed model of the relationship between sociocultural influences and body image concern.....	55
Figure 4: The proposed model of sociocultural influences on body dissatisfaction...64	
Figure 5: Examples of problematic claims in bodybuilding products: Before and after photos	110
Figure 6: A “ <i>care pathway</i> ” for tackling obesity.....	113
Figure 7: Summary of methods used in each part of the study	120
Figure 8: Common claims used in weight control advertisements.....	124
Figure 9: A criterion for a final score rating	127
Figure 10: Quality rating of weight loss websites (n=50).....	130
Figure 11: Characteristics of claims on weight loss websites (n=50)	132
Figure 12: Quality rating of weight gain websites (n=50)	134
Figure 13: Characteristics of claims on weight gain websites (n=50).....	136
Figure 14: Nine-figure rating scale and its classification	145
Figure 15: Methods of data collection	155
Figure 16: Inductive process of constant comparison theory.....	165
Figure 17: Body image perception among women across faculties	170
Figure 18: Body image perception among men across faculties.....	170
Figure 19: Percentage of respondents reporting high and low body image concern sorted by faculty.....	178
Figure 20: Percentage of respondents in each faculty with experience of changing weight.....	181

Figure 21: Percentage of respondents in each faculty reporting they are currently trying to lose weight.....	183
Figure 22: Characteristics of weight change methods reported by gender	184
Figure 23: The prevalence of weight control strategies within each age group.....	184
Figure 24: The prevalence of using weight control strategies by level of body image concern	185
Figure 25: Weight change outcomes among men and women (n=53)	187
Figure 26: Weight change strategies and the outcomes.....	187
Figure 27: Gender and weight change maintenance.....	188
Figure 28: Weight change maintenance and weight change methods	189
Figure 29: Percentage of respondents in each faculty perceiving high pressure from parents	195
Figure 30: Model for sociocultural influence on women's body image concern.....	201
Figure 31: Model for sociocultural influence on men's body image concern	201
Figure 32: Types of mass media advertising weight control products sorted by gender	202
Figure 33: Percentage of respondents in each faculty reported seeing advertisements in the Media	204
Figure 34: Percentage of respondents being influenced by advertisements, sorted by faculty.....	205
Figure 35: Types of weight control product advertisements results by level of body image concerns	207
Figure 36: Types of weight control product advertisements results by age group...	208
Figure 37: Percentage of respondents seeing “ <i>diet plan</i> ” advertisements by faculty	208
Figure 38: Purchasing motives of weight control products based on responses	209
Figure 39: Weight loss products' claims reported by respondents.....	212
Figure 40: Weight gain products' claims reported by respondents	213

LIST OF APPENDICES

APPENDIX 1: The DISCERN tool.....	291
APPENDIX 2: Evaluation tool for weight loss product advertisements	298
APPENDIX 3: Evaluation tool for weight gain product advertisements.....	303
APPENDIX 4: A sample of 50 weight loss product websites	307
APPENDIX 5: A sample of 50 weight gain product websites.....	309
APPENDIX 6: Reliability test results for evaluation tools.....	311
APPENDIX 7: Body Image and Weight Control Products Questionnaire	312
APPENDIX 8: An interview schedule for pilot study	324
APPENDIX 9: Information sheet and consent form for body image study.....	327
APPENDIX 10: Examples of weight control product websites	330
APPENDIX 11: A finalised version of the interview guideline.....	332
APPENDIX 12: An interview guideline for the interviews with pharmacists.....	334
APPENDIX 13: An original article in press with Health Education Research.....	335

LIST OF GLOSSARY TERMS

Acculturation = A process of acceptance and adoption of Western culture by people from other ethnic groups.

Awareness = A state of mind-being where individuals are conscious of the idealised media images

Body image dissatisfaction = An unsatisfactory feeling towards ones own self resulting from body image discrepancy.

Body image concern = A condition where people are preoccupied with the appearance as a result of body image disturbance.

Body image discrepancy = A difference between the perceived current and the ideal body image, which can be categorised into three groups: positive (current>ideal), neutral and negative (current<ideal).

Body image disturbance = A condition where individuals feel dissatisfied and concerned about their own body image.

Body image evaluation = A degree of satisfaction with ones own body image.

Body image investment = A level of cognitive-behavioural process to improve personal appearance such as engaging in weight change behaviours.

Body Mass Index (BMI) = A measurement of body weight in kilograms relative to height in meters squared. Standard measurement used in health to describe whether people are underweight, normal weight, overweight or obese.

Internalization = A condition of individuals who accept the idealised media images and try to achieve these images.

Mesomorphic body type = A term for describing the ideal male physique, which is seen as lean and muscular.

Over-the-Counter (OTC) drugs = Medicines that can be purchased without prescription.

Social comparison process = A process of evaluating the ability and opinion of ones self by making a comparison with others.

Socioeconomic status (SES) = Factors determining a person's social and economic status such as occupation, education and income.

1. AN OVERVIEW OF BODY IMAGE RESEARCH

Researchers have suggested that body image is composed of several elements in relation to the perception of one's appearance. A number of theories, therefore, have been developed in order to explain what factors are involved in the development of body image concern. This chapter will provide an overview of body image literature, including literature review searching, definitions, negative effects and related theories of body image concern.

1.1 Literature review search strategy

Due to the considerable number of studies on body image issues, the researcher used two electronic databases (EMBASE and PsycINFO) to search for the relevant body image studies within the past 40 years (1967-2006). Firstly, the researcher used keywords including *"body image"*, *"body image concern"*, *"body image dissatisfaction"* to search for general information about body image such as definitions, theories and consequences. The next stage was to search for body image studies which had been conducted with young adults and university or college students by putting these specific words combining with the abovementioned keywords. Moreover, the researcher included additional keywords for searching the influences that might have an effect on body image concern. This included *"sociocultural influences"*, *"parental influence"*, *"peer pressure"*, *"ethnicity"*, and *"culture"*. Finally, in order to identify the studies of body image issues across different age groups, the other three search terms were combined with the first three keywords, which included *"children"*, *"adolescents"*, and *"adults"*. Additionally, recent tables of contents were checked for the most relevant journals: Journal of Adolescent Health, Body Image Journal, International Journal of Eating Disorders and using electronic search on the University of Nottingham Library Online Catalogue.

1.2 Definitions of body image

Body image has been defined as *“the perception of overall physical appearance”* and considered as a major component of global self-esteem [1]. The concept of body image combines all elements of people’s mental self-image (including perception, thought, feelings, and attitudes), evaluation of their physical image and the effect of this image on their behaviour [2]. Grogan [3] asserts that body image is *“subjective and can be open to change through social influence”*.

Body image has also been defined as *“a multidimensional construct that encompasses self-perceptions and attitudes”* [4]. Body image has been described as including the following components: affective (feelings towards one’s appearance), cognitive (thoughts and beliefs about this appearance), behavioural (involvement in body or weight change behaviours), and perceptual (the accuracy of perceptions concerning one’s appearance) [5].

Although there are several definitions of body image, in the context of this study body image is defined as the self-perception of body image, which is composed of perceptual, affective, cognitive and behavioural components and can be influenced by physical, mental, environmental and interpersonal factors.

1.3 Body image concern and its consequences

Body image concern is a general term to describe disturbances in body image components. It can be seen in terms of a negative and distorted sense of one’s appearance, an unsatisfied feeling towards one’s body or an overestimation of one’s body. It has been demonstrated that concerns about personal body image can result in deleterious effects on mental and physical well-being [6]. A number of studies have shown that body image concern is associated with chronic dieting [7, 8], unhealthy weight control behaviours [7], poor self-esteem, depression [9], and the development of eating disorders [7, 8]. Moreover, a US study of 522 university students demonstrated that high levels of weight concern and binge eating behaviour were associated with decreased levels of life satisfaction [10].

Increased levels of body concern or a preoccupation with the body can result in a state known as body image disturbance. It has been suggested that body image disturbance is comprised of three main aspects: (a) body size distortion (an inability to form a realistic estimate of personal body size), (b) body dissatisfaction (an unsatisfactory feeling about one's body or body parts), and (c) body image disorder (a condition in which individual behaviour has become disturbed) [1]. Other researchers have suggested that body image disturbance comprises of two elements: drive for thinness (an overwhelming motivation to attain a thin ideal) and body size dissatisfaction (a discrepancy between the perceived current figure and the ideal figure) [11].

The phenomenon of body size distortion, it must be noted, is comprised of two phases. The first phase involves the determination of the ideal body image. At this stage the messages of the media have a notoriously strong influence, reinforcing the desirability of being thin to young women. As a result, women may wish to reject their own bodies and overestimate their body sizes. It is during phase two that a significant gap between current and ideal body size is generated. This can cause body image discontent, depression and generate body change strategies [12].

A number of studies have demonstrated that a great discrepancy between the current and the ideal body image is a major cause of body image dissatisfaction [1, 6, 11]. A large number of studies have also suggested that body dissatisfaction could contribute to eating disorders [1], low self-esteem and depression among female college students [9]. In men, one form of body dissatisfaction has been termed specifically as "*reverse anorexia*" or the fear of thinness, which may lead to the use of anabolic steroids [13].

In relation to this study, body image concern will generally refer to body image dissatisfaction, which is defined as an unsatisfactory feeling towards and devaluation of one's body resulting from its unfavourable comparison to an idealised body shape. This study also examines the consequences of body image concern on the use of healthy and unhealthy weight control behaviours.

The next section will consider theories of body image concern. Only theories related to body image dissatisfaction were chosen for review, as these will provide a useful background as to how body image dissatisfaction can lead to weight control behaviours.

1.4 Theories of body image dissatisfaction

A number of theories have been proposed to explain the development and causes of body image dissatisfaction. Additionally, there are some theories relating to the wider issue of body image concern, but these are beyond the scope of this review.

1.4.1 Personal control belief and body dissatisfaction

An individual's self-perception, it has been suggested, relies either on personal self control (internality) or on other powers beyond their own personal control (externality) [14]. In relation to body image, the locus of control features three attributes: internality, "*powerful others*" externality and "*fate*" or "*chance*" externality [9]. Research shows that individuals with high internal expectancies are more likely than 'externals' to take control of their own behaviours [14]. For example, those with high internal scores who perceived a need to lose weight reported feeling more confident in their ability to do so, which may contribute to an increase in their self-esteem. On the other hand, individuals with high externality scores believe that others are involved in the process of achieving the ideal body image, resulting in feelings of powerlessness, hopelessness, body dissatisfaction, poor self-esteem and depression [1, 9].

1.4.2 Self-discrepancy Theory

This theory was originally developed in order to explain the social-cognitive process occurring during adolescence, and differences between the ideal and one's actual self [15]. The theory purports to explain the composition of the self, by distinguishing between the actual self (the own self), the ideal self (the wished for self) and the ought self (the self expected from others) [16]. The ideal and ought self are known as "*self-guides or self-evaluation standards*". As such, a difference between these self-guides and the actual self can contribute to low motivation, negative states of emotion, and behaviour such as dejection-related emotions, body image dissatisfaction and eating disturbances. It has been reported that even though self-

discrepancy is a cognitive process, it can also be affected by environmental factors [17]. For example, one study found that body image discrepancy can be influenced by an exposure to gender-stereotypical advertisements [18]. Moreover, it has been found that the images depicted in the media can affect an individual's body image discrepancy differently. A thin body ideal could lead to a discrepancy between the current and ideal body image (ideal discrepancy), while fat images could affect a disparity between the current and expected body shape (ought discrepancy) [19].

1.4.3 Self-Schema Theory

Self-schema theory examines the personal construction of a body shape model which makes one person distinctive from another. The body shape model builds from an individual's self-recognition of their own body, from others' reactions to their body, and from the influence of society and the media [12, 20].

Myer and Biocca [12] report that "*body image is unstable and responsive to social cues*". There are four types of body postulated by self-schema theory: "*the socially represented ideal body*" (an ideal body represented in the culture), "*the internalized ideal body*" (a body which is influenced by both the objective and the cultural ideal body), "*the objective body*" (a real perception of one's body) and "*the current body*" (a body belonging to oneself) [12]. Discrepancy between "*the objective body*" and "*the internalized ideal body*" may lead to self-criticism and poor self-esteem. It is believed that the media drive "*the internalized ideal body*" closer to "*the socially represented ideal body*", which means that the personal ideal body image becomes thinner and comes to resemble the unrealistically thin body shape frequently depicted in the media [3].

A key attribute of self-schema is appearance. Individuals who pay more attention to appearance are likely to focus on information related to appearance. This information will be employed to judge their personal appearance or for use as a general reference point. A US study of 168 female college students showed that high appearance self-schema can lead to lower self-esteem, poor body image and negative feelings [20].

1.4.4 Objectification Theory

Objectification theory suggests that society forces women to view themselves as objects based on their appearance [21]. As our society publicises a thin body ideal for women, their bodies become more objectified, causing an increase in body dissatisfaction, eating disturbances and negative affects [21]. Moreover, advertisements promoting specific body parts pressurise women to be viewed by themselves and by others as objects [22]. In children, a study has shown that whereas girls view their bodies as an object, which needs to change in order to be more attractive, boys consider their bodies as a tool to control others. Among women, being successful is linked with appearance, and consequently women use thin media images as a reference point to compare with their own bodies [22]. It should be noted that the evidence for men is not as clear as for women. However, more recently, emphasis upon an idealised male body has made objectification a problem among men, leading to an increase in body dissatisfaction, body dysmorphic disorders, and unhealthy weight gain behaviours [22].

1.4.5 Feminist Theory

Women are taught to view their body as an object from a young age. It has been suggested that *“women who have striven to achieve intellectually, professionally or politically have confronted massive barriers as a result of being female”* [23]. Moreover, women are viewed as *“victims of a society”*. For example, society emphasises the importance of being thin, considers women as in a lower position and associates femininity with being small and weak [3].

McKinley [24] has developed a new measurement called *“objectified body consciousness (OBC)”* based on feminist theory in order to examine how society can affect women’s thoughts. Her theory involves three components: body surveillance (thorough self-scrutiny), internalization of cultural body standards (accepting these standards as one’s ideal body image) and appearance control beliefs (assuring one’s self that these standards can be achieved).

Body surveillance is considered as a predictor of negative body image among young women. Women with high levels of body surveillance may also experience high levels of body dissatisfaction, eating problems and low levels of psychological well-

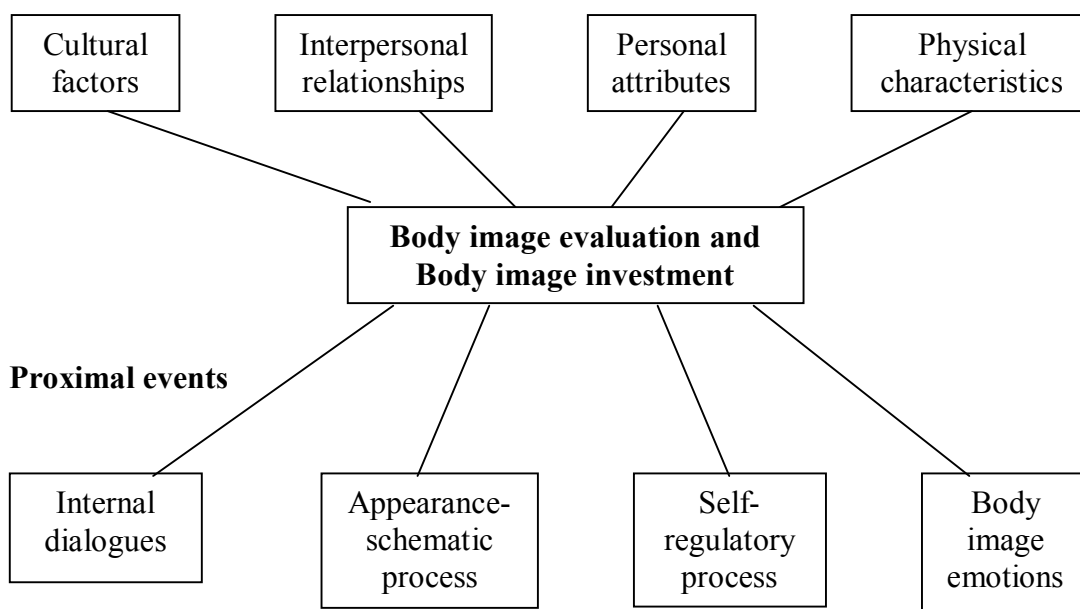
being. When women begin to internalize the cultural standards but fail to meet those standards, they will experience body shame in addition to higher body surveillance. Finally, appearance control beliefs are believed to be associated with eating restraints and eating problems among adolescent girls. However, this component has not been found to be associated with either body surveillance or body shame [24].

1.4.6 Cognitive-Behavioural Model

The cognitive-behavioural model was developed by Cash in 1994. It has been proposed that past experiences such as peer and parental teasing, personal attributes and cultural factors can influence body image attitudes and schemas, which include body image evaluation and body image investment [25, 26]. After the input processes, individuals will evaluate their personal appearance either positively or negatively through proximal processes. A number of factors play an important role in precipitating or maintaining past body image experiences and forming current influences. These are factors such as: internal dialogues (thoughts, interpretations and conclusions), appearance-schema, body image emotions and adjustive and self-regulatory processes (Figure 1) [25, 26]. An example is the failure to meet the standards of society which can lead to negative psychological well-being, social avoidance, body shame and social anxiety [26].

Figure 1: A cognitive-behavioural model of body image concern, adapted from Cash (1994) [25, 26]

Past experiences (input processes)



1.5 Summary

Body image is defined as a perception of one's self which can be affected by physical, mental and social factors. The majority of body dissatisfaction theories explain the development of individual concern as to personal body image in two main aspects: in relation to personal attributes and in relation to external factors, particularly the media.

However, in relation to this study, the 'Figure-rating scale' measurement, which examines how individuals perceive their own current and ideal body image, has been used. Interpretations of this study's results, therefore, will be based on self-discrepancy theory, which can be measured by calculating the differences between the current and the ideal body image. This has the advantage of allowing the researcher to investigate individuals' perceptions about their own self and the ideal self, which can be influenced by cultural body ideals. The main drawback of this approach, however, is that there is no investigation into the effects of past experiences, such as personal attributes and peer teasing, on body image perception.

2. BODY IMAGE CONCERN ACROSS LIFESPAN

Body image dissatisfaction has been shown to affect children as young as five years old, with its level increasing into adulthood. It has been suggested that those with high levels of body image concern at a younger age are more likely to have problems later in life. Moreover, the development of body image concern can produce a negative effect on both physical and mental health.

The most prominent reason for body dissatisfaction amongst women is the overestimation of their own body shape, which can lead to dieting behaviours. Men, on the other hand, consider themselves to be underweight and in need of weight gain as a result of a desire to attain a muscular body shape [9]. However, research has suggested that people perceive themselves differently depending on their age. This section will discuss the prevalence of body image concern across all ages in both genders.

2.1 Pre-adolescence

It is evident that the prevalence of body image concern is widespread throughout the lifespan. It has been reported that children as young as five years old have expressed body image concern [27, 28]. A number of studies in the US, the UK and Australia found that girls were more likely than boys to report feelings of dissatisfaction with their bodies, particularly their lower body parts and a desire to lose weight [29-32]. Moreover, it has been reported that some children may be more vulnerable to body image dissatisfaction than others such as those who are overweight [27-30, 32], those who have high dietary restraint [33, 34] and those who belong to the White ethnic group [31, 32]. However, it is not clear whether the level of body dissatisfaction increases with increasing age [27, 31] (see Table 1).

Table 1: Summary of studies on body image concern among children

Authors	Method	Age of participants	Key findings	Comments
Davison et al. (2003) [27]	The Body Esteem Scale and the Weight Concerns Scale (questionnaire)	182 US girls at age 5, 7 and 9 years	Levels of weight concern and body dissatisfaction decreased over time. Heavier girls reported higher weight concerns and body dissatisfaction than normal weight girls. Weight concern at age 5 and 7 predicted dieting behaviours at age 9.	Longitudinal study of the same girls from age 5 to 9.
Davison et al. (2000) [28]	The Body Esteem Scale and the Weight Concerns Scale (questionnaire)	197 5-year-old American girls	Almost 20% of girls reported concern about their weight. Girls with high Body Mass Index (BMI) reported greater body dissatisfaction and weight concern.	Measuring the body image concerns of both children and parents.
Schur et al. (2000) [29]	Questionnaire including Body Figure Rating Scale, ranging from very thin(1) to very fat(9) and Desired Weight Change	62 US children aged 8 to 13 years	50% wanted to lose weight and 16% had tried to change their weight. 42% of girls wanted to look thinner, while 19% of boys wanted to look heavier. High BMI was associated with high levels of body dissatisfaction.	Using interview to investigate dieting attitudes.
Kostanki et al. (2004) [30]	The Children Figure Rating Scale (FRS) (7 scales) (questionnaire)	431 Australian children aged 7 to 10 years	Girls reported being slightly more dissatisfied with their bodies than boys. Normal weight and overweight girls reported high body image dissatisfaction, as a result of positive body image discrepancy (BID) (current>ideal body image). Underweight boys reported negative BID, whereas overweight boys reported positive BID.	Compared children with different BMI (underweight, normal weight and overweight)

(Continue on the next page)

Table 1 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Adams et al. (2000) [31]	The South Carolina 4 th Grade Nutrition Survey (questionnaire)	1,597 US children 4 th and 7 th grades (aged 10 and 13 years)	Boys wanted to be larger, whereas girls wanted to be thinner. As age increased, children become more concerned about body image. Girls were more likely to perceive themselves as being overweight and to report more concern about weight, compared with boys. White girls perceived themselves as being overweight and had more weight concern compared to black girls.	Various ethnicity and Socioeconomic status (SES) (school regions). Using the ideal adult body size scales.
Robinson et al. (2001) [32]	The Kids' Eating Disorders Survey (questionnaire)	969 US children, mean age of 8.5 years	26% of boys and 35% of girls wanted to lose weight. Girls reported greater body dissatisfaction, wanting to be thin and fear of fatness than boys. As BMI increased, the levels of body dissatisfaction and overweight concern increased. Ethnicity and SES have an impact on level of body dissatisfaction in both genders.	Various ethnicity and SES (levels of parental education).
Hill et al. (1992) [33]	Questionnaire including The Body-Cathexis Scale and FRS (9 scales)	84 9-year-old and 86 14-year-old girls in the UK	Shoulder width, waist, hips and thighs were the least satisfactory body parts among girls with high dietary restraints. Girls with high eating restraints reported lowered body satisfaction, choosing a thinner ideal body shape, compared to non-dieters.	Conducted with older children.
Fox et al. (1994) [34]	The Dutch Eating Behaviour Questionnaire	61 boys and 65 girls in the UK, mean age of 11 years	Girls rated themselves lower in their physical appearance and competence. Girls were more likely to feel fat than boys. Highly dietary restrained girls were more likely to perceive over fatness than low restraint girls.	Addressing two aspects of self-perception: over fatness and appearance.

2.2 Adolescence

Table 2 shows that there are gender differences in terms of the ideal body image and the perceived current body image of adolescents. Research found that adolescent boys were more likely to feel satisfied with their bodies than girls [35-37]. A number of studies of adolescents in Australia, the US and the UK showed girls wanted to be thinner, while boys wanted to be heavier [35, 38, 39]. However, Furnham [39, 40] argued that boys who were dissatisfied with their bodies were equally split between wanting to lose weight and a desire to gain weight. Evidence also suggested that girls were more likely than boys to perceive themselves heavier than they actually were, resulting in greater discrepancy between the perceived current and the ideal body image [39, 41, 42] and a high prevalence of attempts to lose weight [43-45]. However, some studies reported that body dissatisfaction in boys was correlated with self-perception of being underweight [40, 43] and a desire for muscle gain [43, 46]. Moreover, research showed that older adolescents [41, 42], those with high BMI [35, 36, 47], white girls [43, 44, 48] and black boys [43, 44] were at risk of developing high levels of body dissatisfaction. In terms of body part dissatisfaction, boys regarded their upper body parts as the area of most concern, whereas lower body parts were mostly reported by girls [36, 42, 48].

Table 2: Summary of studies on body image concern among adolescents

Authors	Method	Age of participants	Key findings	Comments
McCabe and Ricciardelli (2001) [35]	The Body Image and Body Change Inventory (questionnaire)	1,266 Australian adolescents, aged from 12 to 16 years	More girls felt dissatisfied with their bodies than boys. Girls wanted to lose weight, while boys wanted to gain weight or muscle. High BMI was correlated with body dissatisfaction.	Compared the effect of BMI and age.
McCabe and Ricciardelli (2001) [36]	Interview	40 Australian adolescent boys, aged 13 to 15 years	Majority felt satisfied with their overall appearance. Chest, shoulders and stomach were reported as the most dissatisfied body part. Boys with high BMI reported less satisfied with their bodies and more engaging in weight loss strategies, compared to those with small BMI.	Compared the effect of BMI and age.
Ricciardelli et al. (2000) [37]	Interview	40 adolescent boys in Australia, aged 12 to 15 years	The majority of boys were satisfied with their bodies. 20% dissatisfied with body shape and 17.5% dissatisfied with muscle tone.	Majority are Whites and have normal weight.
Cohn et al. (1987) [38]	FRS (9 scales) (questionnaire)	288 girls and 283 boys in the US, aged 10.5 to 15 years	Girls chose a significantly thinner ideal body shape, compared to the attractive figure to boys but not statistically different from their perceived current figure. Boys chose heavier ideal figures in comparison with the attractive figure to girls and their current figure.	Diverse ethnic groups
Furnham et al. (2002) [39]	The Eating Attitudes Test and the Contour Drawing Rating Scale (CDRS) (9 scales) (questionnaire)	235 UK adolescents, aged 16 to 18 years	Most participants of both genders chose an ideal body image different from their current figure. 75% of girls wanted to be thin, while 36% of boys wanted to be heavier. Boys were split equally into those wanting to lose weight and those wanting to gain weight.	Diverse SES. Majority are Whites

(Continue on the next page)

Table 2 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Furnham and Calnan (1998) [40]	Eating disorder inventory (questionnaire)	143 British adolescent boys, aged 16 to 18 years	Almost 70% reported being dissatisfied with their bodies: 38% wanted to gain weight and the rest wanted to lose weight. Body dissatisfaction among men was correlated with perceptions of being underweight.	Majority had normal weight.
Champion and Furnham (1999) [41]	7-drawing figure scale and 37-item of Body Shape Questionnaire	203 UK adolescent girls, aged 12 to 16 years	Half of the girls described themselves as being overweight and wanted to be thin. Older girls reported being more dissatisfied with their bodies than the younger.	No SES and ethnic comparison
Davies and Furnham (1986) [42]	Body parts satisfaction Questionnaire	183 British girls aged 11 to 18 years	Upper thighs and buttocks were rated as the body parts that they were most dissatisfied with. As age increased, girls reported more concern about body image. Girls who perceived themselves overweight reported more body dissatisfaction than those who considered themselves normal weight.	Examined the effect of age. Majority are Whites and from middle-low SES group.
Serdula et al. (1993) [43]	The 1990 Youth Risk Behaviour Survey (YRBS) (questionnaire)	11,467 US students, aged 15 to 18 years	Girls>boys reported perceiving themselves too fat. Attempts to change weight were associated with weight perception in both genders. Ethnicity has an impact on body dissatisfaction in both genders.	Examined the effect of ethnicity.
Felts et al. (1996) [44]	The 1990 YRBS (questionnaire)	11,631 US adolescents from grade 9 to 12 (around aged 15 to 18 years)	Almost 25% of participants perceived themselves as overweight. 35% of girls and 14% of boys were attempting to lose weight. The self-perception of being overweight was associated with attempts to lose weight, particularly among girls. White women and black men were more likely to try to lose weight than other ethnic groups.	Compared students in different grades and ethnic groups.

(Continue on the next page)

Table 2 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Grigg et al. (1996) [45]	A self-report of perceived weight and BMI measurement (questionnaire)	869 Australian adolescent girls, aged 14 to 16 years	Over 60% perceived themselves as being overweight, though only a quarter were actually overweight. Over 70% of normal weight girls perceived themselves as being overweight. Among girls who had body image distortion, almost 50% were disordered eaters and over two-thirds engaged in healthy weight loss methods.	Mainly focused on the prevalence of eating disorders, body image distortion and unhealthy eating behaviours.
O'Dea and Rawstorne (2001) [46]	A self-report questionnaire about weight gain beliefs and attitudes, body image and desired body weight	397 Australian adolescent boys, average age of 13-15 years	Over one-quarter had tried to gain weight. Over 60% wanted to increase their muscle mass. About two-thirds perceived themselves as having the right weight and over one-third wanted to be heavier.	Diverse SES. Used YES-NO answer format rather than rating scales for assessing body image perception.
Barker and Galamos (2003) [47]	A Self-Image questionnaire for Young Adolescents Body Image Subscale and BMI measurement	83 7 th graders, mean age of 13 years and 87 10 th graders, mean age of 16 years from Canada	BMI was considered as a risk factor in the development of body dissatisfaction among girls.	3-year longitudinal study. Examined risk and protective factors for body dissatisfaction.
Wardle and Marsland (1990) [48]	Body parts satisfaction questionnaire	846 UK adolescents aged 11 to 18 years	Thighs and stomach were the most unsatisfactory areas among both genders. Girls from high SES reported more weight concern than low SES girls. White girls reported more concern about weight than Black or Asian girls.	Only examined in 6 areas of body. Compared the effect of SES and ethnicity.

2.3 Young adulthood

It should be noted that the majority of research on this age group was conducted in the US. During college years, young adults attempt to develop their own lifestyle patterns including exercise and dietary intake, which may affect weight control behaviours later in life. University culture can influence how students perceive themselves as well as their strategies for changing weight [49]. It becomes more important for college women to become thin and beautiful in order to be more attractive and accepted in the US college environment [50]. For young men, society conveys the message that being strong and muscular is the ideal male physique [50, 51]. Consequently, body image dissatisfaction and weight concern are heightened among college students of both genders [50].

A number of studies have defined the prevalence of body image concern among young women as normative discontent (a circumstance in which being overly concerned about body image is considered as normal behaviour) [1, 50]. It has been reported that around 80 to 90% of college women were dissatisfied with their body image [52, 53]. Specifically, women with high levels of body dissatisfaction often chose a heavier body shape to represent their current figure [8, 17, 52]. An Australian study of college-aged respondents showed that over 60% of the women perceived themselves as larger than the ideal, while the majority of the men perceived their current figure closer to the ideal [8]. A recent study of 433 US first-year college students ascertained that body image concern was more prevalent among women than men [50].

A number of previous studies showed that men were less concerned with body weight and shape than women. A study using the Body Image Quality of Life Inventory to investigate the influence of body image experience on everyday life indicated that, in respect of body image, men had a better quality of life [4]. However, several studies indicated that an increasing number of college men reported trying to gain weight and muscle in order to achieve the ideal male physique [50, 51]. Among men, being thin or being fat are considered as undesirable [13, 52]. Therefore, men who perceived themselves as underweight or overweight reported being less satisfied with their body image. Spitzer et al. [13] found that the level of body dissatisfaction among underweight college men was about the same as for overweight college

women. In 2004, Olivardia et al. [54] conducted a study of 154 US college men, their results confirmed that the majority of the men felt dissatisfied with their bodies, perceived themselves heavier than their actual body weight and wanted to be more muscular.

In contrast with the above studies, the results from a study conducted in Colorado State University reported that the majority of college students were satisfied with their body weight and physical appearance, regardless of gender [55]. A study of body image discrepancy among US college students suggests that it is not increasing over time. They found no significant difference between data from the early 1980s and the late 1990s in terms of perceived current and ideal body shape for both genders [56].

When focusing on the area that caused dissatisfaction, women were more likely to be dissatisfied with the middle and lower parts of their bodies, especially hips, stomach and thighs. On the other hand, an Australian study of young adults showed that men wished to change their upper bodies such as the chest and shoulder areas [57]. This has been confirmed among young adults in both the UK and the US [9, 55]. Moreover, research suggests that lower body parts are also becoming an area of concern among men [55]. It was noteworthy that men also expressed more concern about their muscularity than women [58].

On the other hand, a recent US study found that there was no gender difference in body part dissatisfaction. The waist or abdomen was reported as being the area of most concern, followed by weight or shape [58] (Table 3).

Table 3: Summary of studies on body image concern among adults of all ages

Authors	Method	Age of participants	Key findings	Comments
Prevos (2005) [8]	FRS (questionnaire)	29 men and 56 women in Australia aged 16 to 30	Men perceived their current body image as closer to their ideal, whereas women reported a positive discrepancy between current and ideal body image. As age increased, women tended to choose a larger ideal body image.	Small number of participants. Using only one measure for body dissatisfaction.
Furnham and Greaves (1994) [9]	Questionnaire including a modified version of the Body Cathexis Scale and self-perception of weight	47 men and 55 women in the UK aged 18 to 35 years	Women were more dissatisfied with lower parts of their body, while upper body parts were mostly rated as being unsatisfactory by men. Men felt dissatisfied when they were underweight, whereas this was opposite for women.	Small number of participants. Not all participants are students.
Lowery et al. (2005) [50]	CDRS, ranging from 1 (very thin) to 9 (very obese) (questionnaire)	433 US students aged 17 to 32 years	Men perceived themselves smaller than the ideal, while women considered themselves larger than the ideal.	Ethnic diversity.
Drewnowski and Yee (1987) [52]	Questionnaire including current weight, desired weight, body shape satisfaction and self-perceptions of being overweight	226 freshman students in the US, mean age of 18.7 years	48% of women perceived themselves as overweight and 20.9% of men considered themselves as underweight. Women>men reported being dissatisfied with their weight. Men were equally split between wanting to lose and gain weight.	Younger participants compared to other studies of young adults.
Hoyt and Kogan (2001) [55]	Body and Relationship Satisfaction Survey, and BMI measurement (questionnaire)	288 US college students, mean age of 20.71 years	91% of men and 84% of women reported being satisfied with their body image. Men were more dissatisfied with their upper body parts, whereas women were more dissatisfied with their lower body parts.	Most participants are Caucasians. Level of body dissatisfaction not measured.

(Continue on the next page)

Table 3 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Olivardia et al. (2004) [54]	The Somatomorphic Matrix (questionnaire)	154 male US students aged 18 to 30 years	Men perceived themselves to be more muscular and slightly heavier than their current body figure. Men chose their ideal body to be more muscular and with less body fat.	Students from various study courses and ethnically diverse.
Rozin et al. (2001) [56]	FRS (questionnaire)	191 male and 200 female US college students aged 14 to 23 years	Men reported a small discrepancy between current and ideal body figure, whereas women reported a great difference between current and ideal body image.	Compared data between 1983-84 and 1995-98. High SES students.
Stanford and McCabe (2002) [57]	Body image programme and BMI measurement (questionnaire)	60 women and 50 men aged 18 to 22 years in Australia	In comparison with current body size, women wanted to have a smaller body size, whereas men wanted to have a larger body size. As BMI increased, the discrepancy between current and ideal decreased for men but increased for women. Men wanted to increase the size of their upper body, whereas women wanted to decrease their lower body size.	Used a computer programme to generate the current and ideal figure.
Cash et al. (2004) [58]	Body Image Disturbance Questionnaire	220 women and 75 men aged 18 to 63 in the US	Both men and women expressed concerns about their waist or abdomen. Women reported being more dissatisfied with lower body parts.	Wide age range. Testing the use of measurement in normal participants.

(Continue on the next page)

Table 3 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
McElhone et al. (1992) [59]	A silhouette matching technique, ranging from 1 (very thin) to 9 (very obese) (questionnaire)	15,239 adults across 15 European countries, aged over 15 years	39% of the respondents (46% men and 31% women) were satisfied with their weight. Younger respondents were more satisfied with their weight than the older age group. Underweight women and normal weight men were more content with their weight than other groups. Women were more likely to choose an overweight figure to represent their current figure.	Compared the effect of geography and health status on body image perception.
Leonhard and Barry (1998) [60]	FRS and BMI measurement (questionnaire)	98 women and 74 men in the US, aged 18 to 73 years	Women in the obese groups perceived themselves as smaller than they actually were, in contrast to women in the normal BMI group. Women reported a greater discrepancy between estimated current body size and the desirable figure, compared with men. Men perceived the ideal body shape as realistic and attainable.	Various educational and occupational backgrounds.
Halliwell and Dittmar (2003) [61]	Interview	42 British men and women, aged 22 to 62 years	More women than men viewed their bodies as objects. Women regarded aging as reducing attractiveness, whereas men regarded aging as lowering bodily competence.	Various educational and occupational backgrounds.
Garner (1997) [62]	The 1997 Psychology Today Body Image Survey (questionnaire)	3,452 women and 548 men, aged 13 to 90 years	Most women felt dissatisfied with their overall appearance, particularly their abdomen and weight. For men, the abdomen was the most dissatisfactory body part, followed by weight and muscle tone. 89% of women were dissatisfied with their bodies and wanted to lose weight, compared to 22% of men who were dissatisfied but wanted to gain weight.	World-wide respondents.

(Continue on the next page)

Table 3 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Cachelin et al. (2002) [63]	FRS (questionnaire)	801 women and 428 men in the US, aged 18 to 83 years	Women>men felt dissatisfied with their bodies. Older and high BMI participants reported more body dissatisfaction. Asian women reported more satisfaction with their bodies than other ethnic groups. There is no ethnic difference in terms of men's body dissatisfaction.	Nearly half are Hispanic. Acculturation effect on ideal body shape.
Charles and Kerr (1986) [64]	Interview	200 British women (no age stated)	A majority of participants were dissatisfied with their weight and had attempted to lose weight.	Most are mothers of pre-school children.
Furnham and Boughton (1995) [65]	The Body Shape Questionnaire 34 items	110 middle-aged British women in three groups: exerciser, control and Weight Watchers	Women from the Weight Watchers group reported more body dissatisfaction than the other two groups. Exercisers were more likely than non-exercisers to feel satisfied with their weight.	Respondents had a similar demographic background.
Bhuiyan et al. (2003) [66]	FRS and BMI (questionnaire)	3,698 White and Black Americans aged 18 to 35 years	Most White and Black women perceived themselves as the right weight. Nearly one third of men perceived themselves as slightly overweight. Black Americans perceived themselves as thinner than they actually were, in contrast to White Americans.	Examined body image perception among White and Black respondents.
Cash et al. (1986) [67]	The 1985 Psychology Today Body Image Survey (questionnaire)	Over 30,000 adults in the US, aged 15 to 74 years	Lower and mid-torso areas were the body parts that women were most dissatisfied with. Mid-torso (stomach) was the area that men were most dissatisfied. Both women and men reported being dissatisfied with body image. Women were more likely than men to feel negatively towards their appearance and health	Diverse respondent demographic.

2.4 Adulthood

Consistent with the findings for children and adolescents, a number of studies of adults showed that the prevalence of body image concern is higher in women than men [59-64], particularly those who joined slimming groups [65] (Table 3). Studies illustrate that women are more likely than men to overestimate their body size, which can result in greater body image discrepancy [59, 60]. It should be noted that ethnicity has less impact on the self-perception of body image among adults [63, 66]. Interestingly, both adult men and women were more concerned about their mid-torso area than other parts of the body [62, 67].

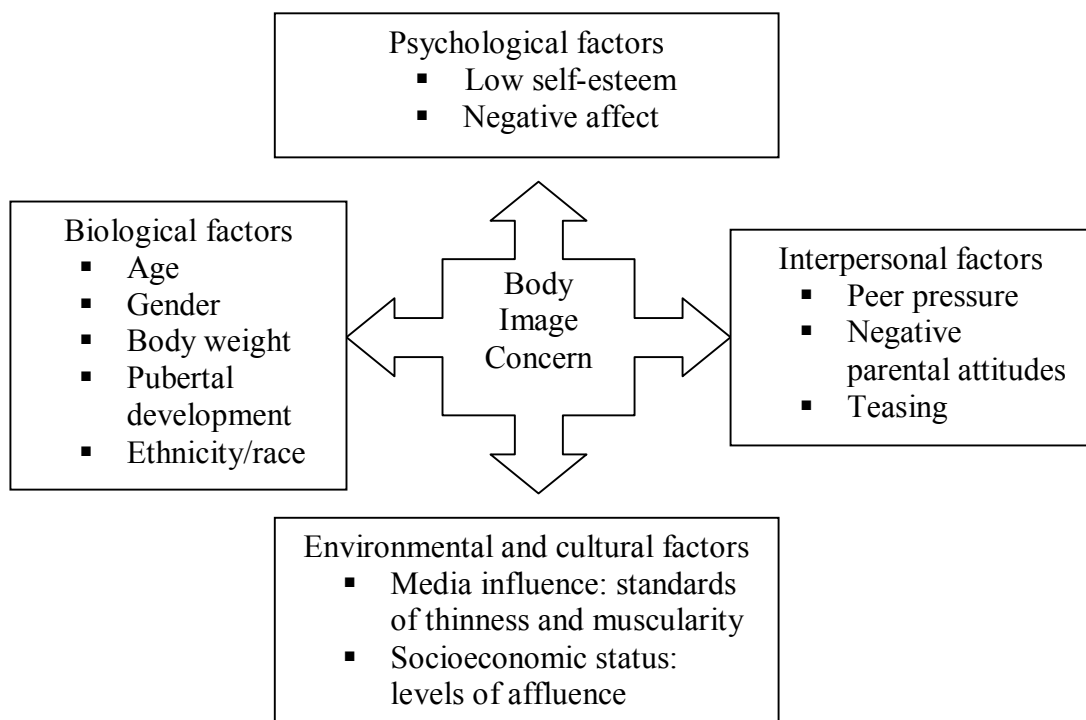
2.5 Summary

Women across all ages report the desire to be slimmer, are more concerned about body image and perceive themselves as larger than their current body image, compared with men. A number of factors such as BMI and the age of respondents also need to be considered. Studies show that individuals with high BMI and respondents in their late adolescence are most at risk of developing body image dissatisfaction. In terms of body part dissatisfaction, women rate their lower body parts as the body area they are most dissatisfied with, whereas men are most likely to feel dissatisfied with their upper body parts.

3. FACTORS AFFECTING BODY IMAGE CONCERN

Body image concern is thought to be influenced by a large number of factors including age, gender, family environment and the media. Taylor et al. [68] have devised a categorisation of these factors into four key areas: biological, psychological, interpersonal and environmental and cultural factors (Figure 2). The following section uses this categorisation to describe the evidence from the literature concerning these influences on body image.

Figure 2: The proposed model of factors affecting body image concern, adapted from Taylor et al. [68]



3.1 Biological factors

Biological factors include any individual characteristics which may influence body image. Many of these characteristics are fixed, such as age, gender and ethnic group.

3.1.1 Gender

As demonstrated in the previous chapter looking at body image over the lifespan, gender has a great impact on how individuals perceive their current body shape and determine their ideal body image. Evidence suggests that women across all ages

report feeling more negative towards their appearance [61, 67, 69], and more discontent with their bodies [1, 70], whereas men of the same age are more satisfied with body image, are less concerned about weight [50, 52, 71] and have higher self-esteem [72]. Grogan [3] indicated that body dissatisfaction had become normative among women in today's society. Moreover, studies showed that young women are more vulnerable to the pressures of socio-cultural standards of aesthetic beauty, which may result in an increased risk of eating disorders [73].

In relation to body dissatisfaction, it has been reported that women were most likely to perceive themselves as being overweight, resulting in a high prevalence of body dissatisfaction and weight loss behaviours [8, 30, 42, 43]. On the other hand, the self-perception of being underweight also had an effect on appearance evaluation, particularly for men [40, 67]. A body image survey in the US showed that only 77% of the underweight men felt positive about their appearance, compared to 83% of the underweight women [67]. Women across all ages wanted to lose weight, whereas men were equally split between a desire to lose weight and a desire to gain weight [39, 57, 71]. In terms of the idealised body image, women prefer a thinner ideal figure, while men want to be more muscular and toned. An interview study with young women showed that even though models were viewed as too skinny, most wanted to be like them [3].

It has been suggested that women and men have different attitudes towards their body image and eating behaviours. The findings from a qualitative study showed that women viewed their bodies as consisting of several body parts, while men conceptualised their bodies as wholes. Moreover, young women considered the beauty standard as unattainable, while young men thought the male muscular ideal to be achievable. Surprisingly, it has been reported that men were less likely than women to compare this ideal to their current bodies [61]. It has been found that both women and men believed that the opposite gender would find a thinner or heavier body shape more attractive compared with their original ideal figure. This difference between their original ideal and the body shape deemed attractive to the opposite sex was smaller for men than for women [74]. Finally, regarding differences in attitudes to food and eating, a study showed that men considered food as enjoyable, whereas women expressed more concern about food as a result of social pressure to be thin.

Women reported placing high value on nutrition in relation to their health and having more problems with food than men. Whereas, men reported less concern about food and frequently referred to exercise and sport for health benefits [75].

3.1.2 Age

Body image is one of the major components of the developmental process. It has been found that negative feelings towards ones self are developed in early childhood and become very important on entering adolescence [31]. Self-motivation is a key factor in developing self-attributes and characteristics during childhood. After puberty, popularity and attractiveness become more salient as a result of the social comparison process. The achievement of these attributes can require more than self-motivation. For those who are unable to achieve that goal, their inability may contribute to negative self-evaluation and the development of body dissatisfaction [17]. Children and adolescents are also considered as the group most vulnerable to the media's influence, as they are taught to view the media as important but have not yet learnt how to evaluate its messages [69].

During early childhood (ages 5-9 years), both boys and girls report having positive self-esteem. As they enter mid childhood, levels of self-esteem decrease, although this effect was greater among girls than boys [76]. Ricciardelli and McCabe [77] stated that “ *...children learn from their families, teachers, friends, and the media that fat is bad and thin is good, and they learn this lesson well before adolescence*”. A literature review confirmed that children aged 7 to 11 criticised obese children as being less popular among friends, unhappy, less favoured by parents, and as performing poorly in school. Evidence suggests that girls as young as five years of age report being on a diet and are concerned about becoming fat [28] and these problems could reach a peak during adolescence [62].

Adolescence is a transitional period from childhood to adulthood. During this period, pubertal, social and environmental factors will play a crucial role in the adolescent's development of a new personal identity [31, 78]. Particularly, pubertal development accentuates the specific gender-roles of masculinity and femininity, affecting body image contentment in both adolescent boys and girls [69, 78-80]. An Australian study among adolescents showed that puberty had a direct effect on body image

satisfaction and the importance of body image among girls, whereas the equivalent physical changes in boys predicted weight gain strategies, particularly the use of protein supplements [81]. The literature suggests that early maturing boys report being more satisfied with their body image than late maturing boys [69, 82]. On the other hand, early maturing girls tend to be more dissatisfied with their bodies than late maturing girls. This also can be explained in terms of physical changes, particularly fat accumulated in the thighs and hips, which move girls away from the thin ideal [47, 82]. A recent study by May et al. [83] ascertained that the level of weight concern among girls dramatically increased during early adolescence (11-15 years), reached its peak at the age of 16 and declined from that point to the age of 18.

On the other hand, the level of weight concern among boys slowly decreased from the age of 11 to the age of 18. Interestingly, it has been reported that girls in late adolescence and boys in late childhood share similarities in terms of high levels of body dissatisfaction [69].

Pubertal development results in adolescent boys having less body dissatisfaction than adolescent girls. It should be noted that most studies on body image dissatisfaction among adolescents primarily focused on weight loss strategies and the desire to be thinner [71]. When men are compared across all ages, men in their early adolescence and young adulthood are more likely to idolise the mesomorphic body type than are other age groups [13]. Adolescent and older males readily aimed to gain muscle, while younger men tended to focus on losing weight and becoming more toned [61, 71].

The results from the 1997 body image survey indicated that body dissatisfaction among women reached its highest levels during young adulthood (aged 20 to 29 years) and remained at this higher level. On the other hand, body dissatisfaction among men was lowest in young adulthood and was highest during their 30s and 50s. [62]. It has also been argued that women at the age of 20 reported less body dissatisfaction than older age groups and showed less body image discrepancy. Similarly, 20-year-old men were more satisfied with their bodies than other age groups [74].

Aging had a positive effect on men's attractiveness but not on their physical abilities [61]. As males get older, they tended to be less focused on their appearance than older women [71]. Evidence suggests that although body image concern did not disappear with age it tended to be less important as women got older [8, 61]. It has been argued that although older women felt less pressure from society, aging may lead to negative feeling about appearance and physical value. It has been suggested that being youthful is linked to attractiveness and power among women. Therefore, aging may prompt women to be involved in both healthy and unhealthy weight control behaviours [61]. However, studies showed that older women report selecting a larger ideal body shape [1, 8], lessened body-checking behaviour [1], low body image concern [1] and low prevalence of dieting [1, 43], in comparison with other age groups.

3.1.3 Body Mass Index (BMI)

Body Mass Index is considered as the salient factor associated with body dissatisfaction among adolescents and adults [76]. This key index is a commonly used method for measuring an individual's body weight in relation to their height. It has been suggested that Body Mass Index (BMI) is strongly correlated with levels of body dissatisfaction: individuals with higher BMI scores are more likely to be more dissatisfied with their current bodies and desire to be thinner [28, 29, 51]. Research has also shown that the effect of BMI was stronger in females than males [76].

Interestingly, a UK study of 458 adolescents found that actual body weight was strongly correlated with the ideal body shape preference, implying that heavier girls were less likely to choose a thinner ideal body image, compared to thinner girls [84]. However, it should be noted that the relationship between BMI and body image concern among children was lower, in comparison with adolescents. This might be due to the fact that children pay less attention to the attainment of the thin body ideal [76].

In a study involving the use of a body image programme to create the ideal body, there was a strong relationship between BMI and the ideal body image. As BMI scores increased, body image discrepancy decreased in men but increased in women [57]. Moreover, overweight adults reported having negative views of their

appearance, fitness and health, compared with the normal weight adults [67]. A study using the Body Image Quality of Life Inventory to investigate the influence of body image experience on everyday life indicated that as BMI scores increased, body image quality of life decreased [4].

A large Canadian survey showed that when women get older, they become heavier. On the other hand, the majority of overweight men were in the middle-age group. Most women who considered themselves as being the right weight had a BMI less than 20, which is considered underweight. Moreover, women with a BMI between 20 and 22 (normal weight) chose their ideal weight as 3 kg less than their current weight, whereas men in the same category wanted to gain 7 kg to reach their ideal weight [85].

BMI also influences the way people view their bodies. In comparison with normal-weight students, respondents with low BMI scores tended to overestimate their body size, whereas overweight students were more likely to underestimate their body size [5]. An Australian study showed that adolescents with high BMIs were more likely to perceive the influence of sociocultural factors than those with lower BMIs. Specifically, respondents with high BMIs were more likely to report perceiving feedback from their mothers to either lose or gain weight than those with lower BMIs. Moreover, male friends may influence those with low BMIs to increase muscle mass, whereas female friends had an impact on weight loss among adolescents of both genders, regardless of BMI [35].

It should be noted that Body Mass Index is based on the same average body composition for men and women, which is useful for general analysis of weight categories: underweight ($BMI < 20$), normal ($BMI = 20-24.99$), overweight ($BMI = 25-29.99$), and obese ($BMI > 30$) [85, 86]. However, this measurement can be misleading. An athlete, for example, may have a BMI above 30 but still look muscular and lean [85].

3.1.4 Ethnicity

Ethnicity is considered as another important factor that needs to be taken into account when conducting research on body image. Studies which report differences in cultural groups are considered in addition to those reporting ethnic group differences. A number of studies have shown that African American females report more body image satisfaction than other ethnic groups [87, 88]. Moreover, African-American women reported a higher body image quality of life compared with White women [4].

A comparison study between Black and White American adults aged between 19 and 35 years showed that even though Black women had a higher BMI, around 40% of them perceived themselves as normal weight, compared with Caucasians. However, there were no significant differences between ethnic groups amongst men. Surprisingly, among White women with BMI lower than 25, almost 20% thought they were overweight. Body image discrepancy scores indicate that Black adults of both genders perceive themselves thinner than their actual weight, whereas the results from White men and women show the opposite results [66].

The evidence suggests that Black women tended to choose a larger figure as their ideal body shape. Furthermore, among the Black communities, overweight women were viewed as being attractive, whereas in the White communities being overweight was not viewed as attractive [87]. Results from the 1999 Youth Risk Behaviour Survey (YRBS) showed that White women were more likely than Black women to use diet pills and laxatives for losing weight. This study also found that the use of illicit substances including steroids, marijuana and alcohol was a strong predictor of diet pill and laxative use among Black adolescents but not among Whites [89].

In terms of the effect of the media, it has been suggested that ethnicity plays a major role in raising levels of awareness and internalization of the idealised thin body image among American adolescent girls [90]. A US study across ethnic groups found that Black and Hispanic women reported less internalization of the thin body ideal than White and Asian American women [91]. This has been supported in a study by Abrams and Stormer [90], which demonstrated that White girls reported more awareness and internalization of the thin body ideal than other ethnic groups.

A study of the effect of watching television programmes on the development of eating disorders among African and European American adolescents showed that frequent television viewing resulted in increased eating disorder behaviours among Whites. However, this study argued that respondents of both races were similar in terms of the internalization of the thin body ideal, although not to the same level. Those Black adolescents who idealised images of thinness were more likely than Whites to engage in eating-disordered behaviours. It has been suggested that, the more they internalize media images, the stronger is the drive for thinness and, as a result, the greater is their discontent with their body image. In turn, as their perceived ideal body image becomes thinner, the more they engage in eating disordered behaviours [92].

Studies have shown that there are a number of protective factors for body dissatisfaction among African-American girls including: strong racial identity; high self-esteem; positive support received from mothers and the Black community; non-internalization of negative attitudes towards body image concern; and black men's preferences for larger and shapely women [87, 92, 93]. It has been suggested that African-American society has a different standard of beauty as a result of less pressure to be thin, low prevalence of eating disorders and high prevalence of obesity [94].

The high prevalence of body dissatisfaction was not confined to White Americans and was also common among other ethnicities in the US [95]. A review study showed that Hispanic American girls reported greater body image dissatisfaction than European American girls. Moreover, another study found that the level of body dissatisfaction among American girls of Brazilian descent was higher than for White Americans. It has been suggested that this may be due to the process of acculturation, which may cause the thin US body ideal to be more readily accepted by other ethnic groups, which could lead, in turn, to higher body dissatisfaction [96].

Body image preferences also vary with ethnic group. A study of US college students found that although Asian women had a lower body weight, they chose a smaller ideal figure compared with Caucasian women. The pattern was different for men, with Asian men reporting an ideal figure larger than their current figure, whereas

with Caucasian men there was no discrepancy between current and ideal figure [97]. Similar differences have also been shown across Australian ethnic groups. A study found that although indigenous respondents reported receiving less media messages, they were more likely than non-indigenous groups to engage in weight change behaviours. This might be due to the fact that media messages had more impact on those who were not aware of those messages rather than those who were familiar with them [98].

The Western-idealised body image is reported to be less influential in ethnic groups other than White and African American women [90]. A study of 274 Asian and White British women students found that White women were more likely than Asians to perceive themselves as slightly overweight, to feel dissatisfied with body image and to report engaging in dieting behaviours. However, Figure rating scales indicated that Asian students selected a thinner figure to represent their ideal [99].

The influence of the media also varies across ethnic groups. A study found that European Americans reported higher levels of awareness and internalization of the thin ideal, in comparison with Mexican American and Spanish women. Warren et al. [100] suggest that ethnicity may act as a protective factor against the effect of the media in some ethnic groups as they do not emphasise the thin ideal, but do state the importance of other personal traits, thus focusing less on appearance.

It is not clear why other ethnic groups living in Western countries report less desire to achieve body image idealised within these societies. Research has suggested that this may be due to differences in media images across ethnic groups or that the images do not affect body image perception in some ethnic groups [98]. A study of Asian-British girls confirmed that high levels of body image concern among Asians were associated with traditional culture rather than Western orientation [101].

It has been suggested that there are three main factors that may influence Asian American body images. Firstly, traditional Asian values place more emphasis on promoting harmony within the community. Secondly, the different cultural ideal of beauty, despite Asian American women's desire for a thin body shape, the prevalence of weight loss behaviours was lower than for White groups. Thirdly, this

ideal body image may be influenced by experiences of racism and negative stereotypes of Asian people [102].

The prevalence of body image concern has been found to be similar in different countries. For example, a study of young men from three countries: Austria, France and USA, showed that the majority of men wanted to be more muscular than their current body and believed this ideal was admired by women [103].

3.2 Psychological factors

Psychological factors are those relating to the mental health of individuals which can affect how they perceive their own body image. The main factors relevant to body image are self-esteem and negative affect.

3.2.1 Self-esteem

It has been suggested that self-esteem can be seen as an aspect of physical self-worth, which is composed of “*perceived sports’ competence, physical condition, attractiveness, and weight concern*” [50]. It has been found that the possession of high self-esteem is the main protection during the transition process in college years. Women who reported high self-esteem tend to develop better quality of life in personal, family, academic and social aspects [104]. A Canadian study of self-esteem across different age groups found that overall, male students had higher self-esteem than female students. Secondary school students reported lower self-esteem than students from primary school and university [72].

Low self-esteem can give rise to body image dissatisfaction as a result of high pressure to be thin [50] and the self-perception of being overweight [105]. Self-esteem is considered a major factor for the development of body dissatisfaction [104, 106]. A study of US college women indicated that low self-esteem was associated with body shame (a negative feeling towards one’s body resulting from an inability to attain the cultural ideal body), body image discrepancy and body image dissatisfaction [104]. Two studies have found that low self-esteem in children and adolescents was mainly affected by sociocultural factors such as family and friends [69, 106].

3.2.2 Negative affect

Ricciardelli and McCabe [106] found that negative affect (low mood) not only moderates the effect of sociocultural influences but also produces a direct effect on body dissatisfaction and body change strategies among adolescents, particularly girls. A study of 236 Australian children showed that negative affect had an impact on dieting in girls and binge eating, obsession with foods and social pressure to eat in boys [107]. Moreover, it has been reported that girls with high levels of negative affect had a tendency to develop eating disorders [108]. A study of Australian children indicated that experience of low mood was associated with an attempt to lose weight in girls and a desire to gain muscle in boys, regardless of their actual weight [108]. A large survey of Australian adolescents demonstrated that respondents who engaged in either healthy or unhealthy weight control strategies reported high levels of negative affect [81].

3.3 Interpersonal influences

Interpersonal influences are those relating to interactions with other people, the key ones being friends and family. It has been suggested that peers and parents played an important role in emphasising the thin body ideal in both positive and negative ways [109]. Moreover, it has been highlighted that from childhood to adolescence, peer influences become more important. This following section will consider a number of relevant studies regarding the effect of family and friends on body image and body change strategies.

3.3.1 Family

During adolescence, parents tended to be more negative and critical about their children's body image, eating behaviours and physical activity. Pressure to be thin and encouragement to lose weight from parents may persuade adolescents to engage in unhealthy weight control behaviours [7]. Evidence suggests that being teased by your family is directly associated with negative feelings about current body image and a desire to be thin among female adolescents, young adults and overweight mature adults [104].

Research has shown an association between weight loss attempts among children and parental comments on children's weight. In particular, mothers concern about their

own weight and mothers comments about their daughters weight were correlated with daughters' worries about getting fat [28, 110].

Research on adolescents has also shown that parents were a major influence on their daughters' physical appearance [111]. In particular, fathers placing high value on being thin was associated with body dissatisfaction among girls [112]. Moreover, it has been found that daughters' attempts to lose weight by dieting or exercise were influenced by their mothers' endorsement and encouragement to lose weight [113].

An American study of 81 college students showed that their level of self-esteem was associated with parental nurturing [114]. Another US study of young adults indicated that there was a strong relationship between poor body image in women and parental feedback. In this study, the majority of respondents reported receiving parental feedback on body image. Interestingly, women received more comments about appearance from their fathers than their mothers. Despite both men and women reporting being teased by both parents about their bodies, this only had an effect on the body image of women [115]. Osborn [116] found that even though women received positive comments from their mothers, it did not protect them from being dissatisfied with their bodies. Moreover, negative comments from fathers played an important role in decreased body satisfaction among women.

It is not clear whether parents have an influence on their sons' concerns about body image. Research has shown that perceived pressure from parents was associated with the use of weight loss or weight gain strategies among boys [117]. In particular, positive comments received from their mother and female friends may protect male adolescents from body dissatisfaction [37]. However, feedback from their father and male friends had a great impact on boys' body image concern [110] and weight gain strategies, including the use of food supplements [37, 118, 119]. However, it has been argued that feedback from parents was a strong predictor of body satisfaction among boys [120]. A review study also found that boys' weight concerns were not influenced by parental comments on weight loss [77].

3.3.2 Peers

There are two mechanisms suggested concerning the influence of peers on dieting behaviours [121, 122]. First is the direct mechanism, which is where the influence is clearly expressed and can be explained through the social reinforcement model. Social reinforcement has been defined as *“comments or actions of others that serve to support and perpetuate the thin ideal body image for women, such as teasing and encouragement to diet”* [122]. Second is the indirect mechanism, which can be seen in terms of peer modelling or social norms. This can occur when individuals try to imitate others behaviours, because they see behaviours such as dieting and body image preoccupation as acceptable in their social setting [121, 122]. Moreover, this can be seen in the example of idealised popular girls, who are seen as thin and pretty, and may persuade individuals to try to attain that ideal in order to fit in [121].

There is evidence that peers have a great impact on body image concern among children of both genders [77]. It has been highlighted that from childhood to adolescence, peers become increasingly important in making comparisons [116]. In terms of peer influences, boys receive pressure from peer teasing, whereas girls perceive pressure through conversations with friends about weight and dieting, teasing about being overweight and the popularity associated with being thin [76, 123]. It has also been suggested that friends' concern about their bodies also has an effect on body dissatisfaction and awareness of dieting among girls [123].

Among adolescents, peer modelling was a strong predictor for dieting, more so than social reinforcement [122]. It has been reported that both peer modelling and friends' negative attitudes towards weight and dieting had an impact on girls' dieting behaviours [121], levels of body dissatisfaction [124], self-esteem [122] and use of extreme weight loss strategies [119, 122]. Not surprisingly, a study of adolescents showed that groups of friends who had a high level of body image concern and engaged in weight loss practices were more likely to talk about weight-related topics, to compare themselves with others, to be teased about their appearance by friends, to perceive pressure to be on diet from friends, and to perceive their friends' concerns about thinness and dieting [125].

A study of US college students showed that most women and men perceived pressure from their peers to be thin and more muscular. The most influential messages were the comments from opposite gender peers [57]. Unlike the findings in adolescents, perceived pressure from peers only affected young adults' body image discontent but not their negative affect [126]. One study found that peer teasing about weight was associated with negative body image among men and women [116]. Moreover, it has been found that the effect of peer pressure was greater among young adults with high internalization of the thin body ideal and high levels of body dissatisfaction [126].

3.4 Environmental and cultural factors

Environmental and cultural factors are those relating to the external influences affecting body image, which include the media and socioeconomic status. A number of studies have shown that the media has a great impact on transmitting idealised body ideals to both women and men, resulting in negative feeling about one's body and the use of weight change strategies [49]. The following section will review the related evidence regarding the influences of socioeconomic status and the media on body image perception and weight change behaviours.

3.4.1 Socio-economic status

It has been suggested that social class may have an effect on how individuals perceive themselves and the importance they place on attaining the ideal body image. A study of 1,597 US children showed that girls from higher social classes were more likely to choose a thinner body ideal and have tried to lose weight compared with girls from lower social classes [31]. These results were similar to a study of 768 Australian children and adolescents, which showed that respondents from more affluent backgrounds reported greater discrepancy between the perceived current and ideal figures than those from middle and low SES groups [127]. This is consistent with two UK studies of British women, which indicated that more women of higher socio-economic status (SES) reported high body image concern and dieting than those from lower SES [48, 128]. Furthermore, another UK study found that girls in more affluent groups were more likely to talk about weight and dieting with their family, to be aware of media pressure for thinness, and to have experience of friends and family trying to lose weight [129]. It has been suggested that people in higher SES groups may see those who are thin or have lower weight as being more

acceptable, which could lead them to change their attitudes and behaviours towards body image [130].

Conversely, a recent study of US adolescent girls and boys showed that respondents in the lower SES group reported having lower self-esteem and a higher level of body dissatisfaction than those in higher SES [131]. However, some researchers have argued that the effect of socio-economic status may not be very pronounced compared with the effects of other factors. Grogan [3] stated that body image concern was not affected by socio-economic status, since the mass media present the same thin body ideal to people of different social classes.

3.4.2 Media influence

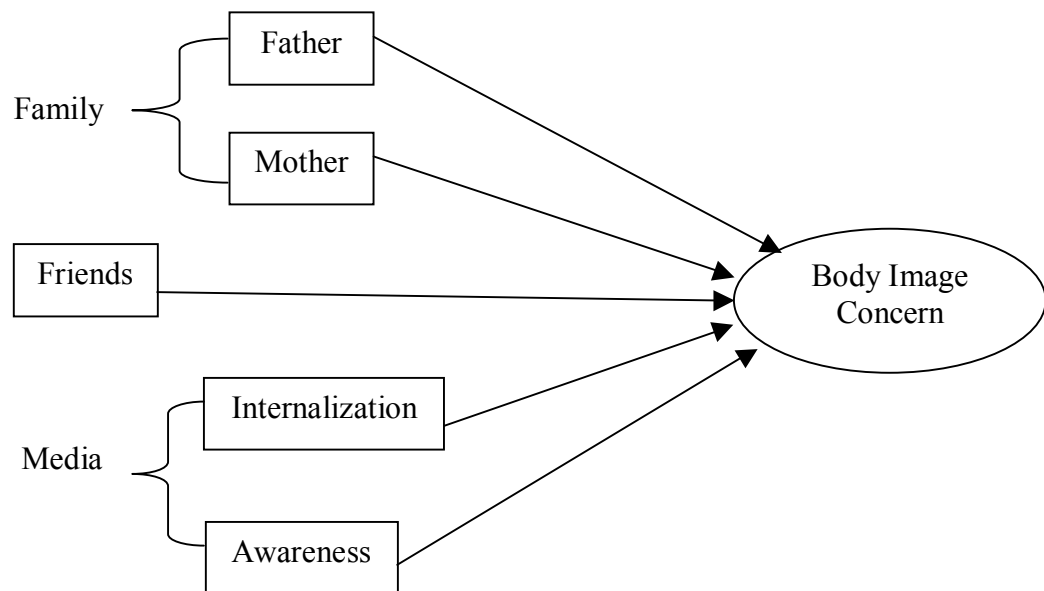
The media is able to influence people in many ways, particularly through the presentation of the idealised body image. This can be seen from many sources including television, film, music videos, newspapers, magazines and more recently Internet sites. Moreover, it has been reported that exposure to this ideal image can increase the awareness and internalization of this ideal, which results in high levels of body image concern [105]. More alarmingly, health experts have recently raised concerns over websites which intentionally aim to support people suffering from eating disorders, but whose contents could instead lead them to glorify their conditions and refuse to seek the right treatment [132].

The media plays an important role in transmitting a standard of thinness to women across all ages. Studies show that the thin body ideal in the media can lead to body image concern and the use of unhealthy weight control methods [49]. Moreover, today the idealised male body image presented in the media is becoming more muscular than the average man, resulting in an increasing number of men developing muscle dysmorphia or misusing anabolic steroids [103]. Due to the great deal of research on the effect of the media on body image, this area will be examined further in chapter five in order to explain it in more detail.

3.5 Summary

In summary, this review of the relevant literature suggests that there are a number of factors influencing body dissatisfaction. As summarised in Figure 3, these factors include family, friends and the media. This model was used to develop the questionnaire in the study described in this thesis, investigating body image perception and its influences among university students.

Figure 3: The proposed model of the relationship between sociocultural influences and body image concern, adapted from Ricciardelli and McCabe [133] and Blower et al. [134]



4. GROUPS AT A HIGHER RISK

A number of studies of body image have shown that there are some groups of people who are considered to be more concerned about body image than the general population. These groups include people with eating disorders, people with body dysmorphic disorder, athletes, exercisers and homosexual people.

4.1 Eating disorders

Eating disorder problems can be categorised into three major types: anorexia nervosa, bulimia nervosa and non-specific eating disorders [73]. There are several factors that cause eating disorders such as genetics and the environment. Two of the major criteria for screening eating disorders are high levels of body image concern and body image distortion [73].

Anorexia nervosa is a condition involving the self-restriction of dietary intake, which can be manifest as compulsive exercise, self-induced vomiting, or as cutting down on fat containing food. Consequently, most patients have a much lower Body Mass Index (BMI), up to 85% of the healthy BMI [73]. Bulimia nervosa is a condition of binge-eating alternating with any method of purgation such as laxative use, self-vomiting and fasting. Apart from being concerned about weight, bulimic patients also express a fear of getting fat [73].

Eating disorders are mostly found in women, particularly between the ages of 15 and 25 years. The prevalence of anorexia and bulimia nervosa among young women in the UK is estimated as being 1% to 3% [135]. However, this relates to only these two conditions. It has been estimated that as much as 5% of the American population has experience of binge-eating disorders [136]. Research has suggested that the incidence of eating disorders in men is ten times lower than in women [13]. It has been reported that around 10% of patients with eating disorders are men; however, this could reach up to 25% among teenage boys [135].

Several studies have shown that women with eating disorders normally consider themselves as being overweight and wish to have an unrealistically thin body. However, an increasing number of men suffer from dissatisfaction with their bodies,

categorised as those who perceive themselves as too fat (eating disorders) and those who perceive themselves as too small (muscle dysmorphia or reverse anorexia). There are a number of physical, psychological and social problems associated with muscle dysmorphia, principally in conjunction with anabolic steroid use [13, 103].

Griffiths et al. [137] found that patients with eating disorders were more likely than normal weight young adults to internalize and accept unrealistic media images. It has been suggested that these patients, particularly women, are more vulnerable to media messages and perceive more pressure to be thin than those without eating disorders in same age group. Specifically, bulimic patients had higher scores for the awareness of the idealised thin images than anorexic patients and controls. A possible explanation is that this group of patients tend to focus on the importance of thinness in society as well as on general aspects of appearance [137].

4.2 Body dysmorphic disorder

Body dysmorphic disorder (BDD) has been defined as involving *“a preoccupation with an imagined defect in one’s appearance, a slight physical anomaly, or the person’s concern is markedly excessive”*. This could affect personal health both physically and mentally [16]. One type of BDD that specifically occurs in men is known as *“muscle dysmorphia or reverse anorexia nervosa”*.

A study of 108 body builders showed that almost 10% of the respondents suffered from this condition. The main characteristics of these respondents were obsession with body shape, social interruption and the use of performance-enhancing substances [138]. More importantly, research shows that some patients with severe cases of BDD were also diagnosed with other conditions such as: depression, social phobia and obsessive-compulsive disorder. The main criteria for diagnosing individuals with BDD are that they spend a lot of time gaining confidence before going out and mostly avoid being in public places. It has been suggested that the prevalence of BDD among the general population is around 0.7%, mostly affecting people during adolescence and young adulthood. However, in particular settings, such as dermatology clinics, the percentages may reach up to 12% [16]. It has also been found that BDD patients reported greater discrepancies between their perceived

current and their ideal body shape than a control group. This may be due to the fact that they fail to attain their own standard of ideal body image [16].

4.3 Athletes

Being physically fit and lean could place athletes at risk of eating disorders, as they are forced to maintain their athletic figures through pressure from coaches, families and sponsors [73]. Some sports, in particular, such as gymnastics and figure skating, place a heightened importance on body shape. Moreover, these sports require the athletes to perform in a small and revealing outfit. This could potentially pressurise them to achieve a thin ideal body shape [139].

A high prevalence of eating disorders has been found among athletes participating in particular sports, especially those that require a very lean body shape such as gymnastics, swimming and running [73]. A large survey of female athletes in the US and Norway found that nearly one-fifth of them reported engaging in unhealthy weight loss methods such as vomiting and laxative use [139]. A US study showed that most adolescent athletes who used nutritional supplements believed these products would enhance their sports performance [140]. Moreover, it has been found that individuals who participate in sports are more likely to report a high percentage of use of creatine, amino acids, steroids and growth hormones in order to increase muscle mass and strength [141].

4.4 Exercisers

Exercising to losing weight and tone muscle can be linked to body dissatisfaction and eating disorders, as a method for purging [65]. Study has shown that vigorous exercise can lead to negative feelings about appearance. Even though exercising may promote self-esteem, using this activity as part of the attainment of idealised media images can be harmful to body satisfaction [142].

It has been reported that women who were frequent exercisers were more dissatisfied with their bodies than other women [65]. Evidence also suggested that women who participate in vigorous exercise are more likely than those who moderately exercise to have a high level of body image concern and at least one eating disorder symptom [139]. However, a number of studies have shown that the level of body

dissatisfaction among athletic men varies for different types of sporting activity. One study found that male runners were less likely to express high levels of body dissatisfaction than male weightlifters [71]. This has been confirmed in an interview study with male fitness leaders which showed that this group of men wanted to have a lean body shape with low body fat levels, which was perceived as having more power and competency than a muscular body shape [142].

4.5 Homosexuality

It has been reported that sexual orientation may result in differences in body image focusing. A study of homosexual and heterosexual men and women showed that homosexual women tended to choose a larger ideal body, compared to heterosexual women. It has been suggested that lesbian culture place less emphasis on the thin body ideal. On the other hand, male gay culture place high importance on being slim and muscular. Consequently, in comparison with heterosexual men, homosexual men perceived themselves as being larger than their ideal body shape and wanted to be slimmer, resulting in high levels of body image concern and a greater body image discrepancy [143-145]. Moreover, the homosexual men were more likely to engage in dieting than heterosexual men and homosexual women. Interestingly, it has been found that the levels of body image dissatisfaction in homosexual men were as high as in heterosexual women [143].

5. THE MEDIA AND ITS EFFECT ON BODY IMAGE

5.1 Introduction

Both women and men are bombarded with the portrayal of thin and muscular models depicted in the media. As a result of being pressurised to attain those ideals, an increasing number of people report being dissatisfied with their body image and engaging in weight change behaviours [146]. The preponderance of slim women depicted in the mass media has been well documented. Evidence suggests that the standard of beauty in Western society has changed since 1959 from plumpness to a thin ideal body [13]. Consequently, being thin is now seen as the ideal standard of beauty for women and as such women will either want or try to conform to an unrealistically thin figure [3, 8]. It is noteworthy that there are two types of images which women receive from the media: “*Artificial Beauty*” (where technology is used to create unrealistically thin female images) and “*Genetic Realities*” (the actual biological body image of individuals which tends to be heavier than media images of “*artificial beauty*”) [147].

It is clear that the media is not only presenting the thin body ideal but also transmitting this ideal to women, as evidence shows that exposure to the thin body ideal in the media can negatively affect women’s body satisfaction. One US study found that the body size of movie actresses and models in magazines has now dropped to about 80% of the population mean [148]. Moreover, research has shown that articles and adverts for dieting in women’s magazines have dramatically increased since the early 1950s [149]. It has been reported that dieting markets are increasingly making profits from a range of weight loss strategies such as fitness equipment, cosmetic surgery and weight loss programmes [55]. Moreover, the emphasis upon thinness is not only seen in the media but also in toys for children, with popular dolls such as Barbie[®] portraying an unrealistically thin body shape [7].

Media images may change how women view their bodies. Moreover, consumers themselves also favour products in the ideal setting and using attractive spokespersons [150]. Women are presented with images that suggest an association between a slender shape and happiness, success, youthfulness and social acceptance

[3]. However, in fact such images were linked to negative emotions such as anxiety and neuroticism [150].

Nowadays, the media promote not only the standard of thinness for women, but also the standard of muscularity for men [3]. However, the muscular ideal has only been evident since the 1980s [13, 151]. In terms of the male ideal body, the mesomorphic body type is considered preferable to the ectomorphic (thin) and endomorphic (fat) types. The idealised male body has been defined as featuring “*well-developed chest and arm muscles and wide shoulders tapering down to a narrow waist*” [152]. It has been suggested that the muscular body ideal is becoming more widespread among men as can be seen from boys’ action toys, the rapid growth of the gym industry, media images of muscular male models and numerous advertisements for weight training machines and bodybuilding products [152].

Attempts to attain a muscular body shape have been shown to be associated with low self-esteem and depression [7]. An interview study with 20 men across different age groups showed that although men described being fat as linked with weakness and lack of control, men also placed an emphasis on body aesthetic rather than health and fitness [151].

Moreover, the muscular body ideal is becoming widespread across ethnic groups. It has been suggested that the more men from other ethnic groups acculturate Westernised media images, the more they become dissatisfied and concerned with their body image [7]. This section will review the relevant theories and studies examining the effect of the media on body image dissatisfaction and the attempt to change weight across all age groups.

5.2 Theories related to the effect of the media

Although it has been confirmed that exposure to the media images can have a great impact on body image satisfaction, a number of theories have been developed to explain different aspects of influence from the media on body image. However, this study only reviews the theories that are widely accepted and relevant to the purposes of this thesis.

5.2.1 Sociocultural Theory

Sociocultural theory has been widely used for studying the effect of the media on body dissatisfaction and eating disorders among Western women [153]. This theory suggests that both society and culture influence women to become thinner or slimmer and men to become more muscular [21]. Sociocultural theory has examined the effect of the media in two respects. Initially, it focussed on how media images have an impact on body satisfaction and eating disturbances. More recently, several studies have examined another aspect of how these ideals can affect individual body image perception [154]. It has been suggested that the media can affect individual perceptions of the ideal body image via gender-role endorsement [155].

In terms of the influence of sociocultural factors on eating disorders, Stice [149] proposed that the media can pressurise women into developing eating disturbances via three mechanisms: the promotion of the thin body ideal, the emphasis on appearance for the female gender (gender-role endorsement) and the importance of appearance to social success [149].

5.2.1.1 The cultural body ideal

According to the prevailing thin body ideal, studies have shown that women presented in the media have a significantly thinner body shape than women in the general population [13, 156, 157]. Garner et al. [156] found that the body sizes of centrefold models in Playboy magazine and Miss American Pageant winners had significantly decreased over the previous twenty years (1959-1978). The same study also showed that articles about dieting and exercise in six women's magazines had increased in number during the same period of time [156]. Wiseman et al. [157] extended the study to investigate the current situation of the thin body ideal in American society during the period of 1979 to 1988. Not surprisingly, the results of this study were similar to the previous findings. A repetitive study by Spitzer et al. [13] also found a decrease in the body size of models in Playboy magazine (1977-1996) and Miss American Pageant (1953-1985). Interestingly, this study found that almost one-third of the models had BMI lower than 17.5, which is one of the criteria for anorexia nervosa [13]. On the other hand, Sypeck et al. [158] argued that the BMIs of models featuring in Playboy magazine had slightly increased from 1979 to

1999. The authors argued that this new trend may result from an increased awareness of the issue of thin models and less body image concern among women [158].

Evidence suggests that body sizes of men in the media have dramatically increased. A study of 130 men depicted in Playgirl magazine between 1986-1996 found that these men had significantly larger body sizes compared to the general population of Canadian men [13]. On the other hand, a study of male portraits in two popular men's magazines showed that the male ideal body shape had not changed from the 1960s to the 1990s [159].

Studies examining popular women's and men's magazines in the US during the 1980s showed that women's magazines contained more advertisements and articles about diet, health, fitness and beauty than men's magazines [160, 161]. Even though there are only a few studies examining the male body ideal depicted in the media, it has been suggested that the media are also increasingly promoting a muscular ideal for men. A content analysis of two popular men's magazines showed that they contained an increasing number of articles and information aimed at toning, strengthening and building muscle mass over the past three decades (1960-1992) [159].

5.2.1.2 The emphasis of appearance on gender role

Not only do the media emphasise the importance of appearance, beauty and femininity, but women also believe that being thin is part of their feminine role [162]. A study of 238 college women found that there was a positive relationship between endorsement of the female gender-role and the thin body ideal [155]. Stice's review [149] of the influence of the media on bulimia nervosa showed that being attractive was associated with femininity. Moreover, he found that women believed that femininity was linked to an ectomorphic (thin) shape rather than to mesomorphic (muscular) or endomorphic (plump) body shapes [149]. Twamley and Davis [162] ascertained that women who scored high conformity to thinness norms were more likely to have internalized the thin body ideal [162].

Evidence also suggests that the media focus on the female body in terms of its parts (body-as-object) rather than its functions (body-as-process) [163]. A study by

Rudman and Verdi [164] showed that magazine advertisements of female models were more likely to emphasise individual body parts rather than the entire body. A US study of 228 undergraduate students showed that women were more likely to view their body as an object than men. Moreover, this study also pointed out that men were inclined to view their body as a process rather than as an object [165]. However, it has been suggested that the media increasingly encourage men to view their bodies as objects. A content analysis of 40 music videos shown on Music Television (MTV) showed that most music videos paid more attention to the body parts of men and women than to the whole person [166].

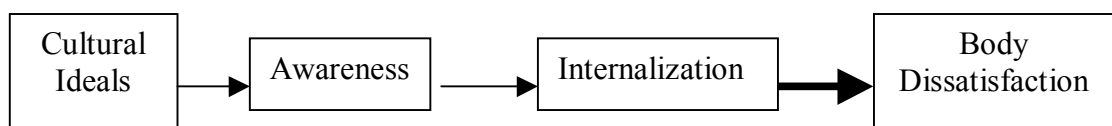
5.2.1.3 The importance of appearance for societal success

Aside from attractiveness being linked with femininity and masculinity, it is also related to becoming more successful in society. Two meta-analyses suggested that physical attractiveness was positively associated with societal acceptability [167, 168]. Feingold [167] concluded that attractive people of both genders were more likely to be viewed as sociable, dominant, mentally healthy, intelligent, and socially skilled than those who were considered unattractive.

5.2.1.4 The effect of media on the individual's perception of the ideal body image

Despite a large number of studies of the effect of media exposure on body image and eating behaviours, research has recently shifted focus to examine the effect of the media on individuals' perceptions of cultural body ideals via their awareness and internalization of those ideals (Figure 4). The process begins by individuals being exposed to the societal standards of appearance. It is followed by the process of awareness, and this will depend on the extent to which they become aware of these ideals. The last process is internalization, which can occur when individuals accept the cultural ideal and use these images as a reference point for their own ideal body image, resulting in high levels of body dissatisfaction [154, 155].

Figure 4: The proposed model of sociocultural influences on body dissatisfaction, adapted from Warren et al. [100]



Most studies have investigated the effect of both awareness and internalization on different aspects of body image by using a specific instrument such as the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ). A cross-sectional study of Polish and American college women showed that both awareness and internalization were correlated with decreased body acceptance [105]. However, most studies illustrate that women's body dissatisfaction depends on the degree of internalization of the ideal body image [162, 169, 170].

Thin-ideal internalization can affect body dissatisfaction directly and indirectly. A number of studies have shown that women with a high internalization of the thin ideal reported greater body image discrepancy, body image discontent and drive for thinness. Moreover, this effect was even stronger in those with high BMI scores [105, 171]. A US study of 175 college women indicated that internalization of the thin ideal can increase the effect of body dissatisfaction and perpetuate the effect of friends, parents and the media on body image perception [154, 162].

A US study of children in primary school showed that girls with high scores for awareness of the thin ideal reported a desire to look like the thin ideal and being pressurised to look like that ideal. Moreover, girls with a high internalization of the thin ideal body reported being admired, wanting to look like that ideal and perceived that the ideal was important for them. On the other hand, among boys, only the internalization of the muscular ideal was associated with admiring male models, wanting to look like them and it being important to look like them [22]. An Australian study of 106 adolescent boys showed that among boys who were exposed to the muscular body ideal, high internalization of the muscular body ideal was strongly related to greater body dissatisfaction and depression [172].

Cusumano and Thompson [154] studied the effect of the media on body image by comparing the processes of exposure, awareness and internalization. Their results showed that exposure to the thin body ideal in magazines did not affect participants' body image, eating disturbances or self-esteem.

5.2.2 Social Comparison Theory

In 1954, Festinger [3] developed social comparison theory, based on the hypothesis that individuals will evaluate themselves by making comparison with others. It should be noted that there are two types of comparisons: downward comparison (where people favourably compare themselves to others) and upward comparison (where people compare themselves to others they consider superior). A meta-analysis indicated that exposure to the thin ideal image could affect women's body image dissatisfaction in comparison with exposure to normal body pictures [173]. This can be well-explained by social comparison theory, in particular by 'upward comparison'. Individuals consider the thin ideal body image as being attractive by comparison to their own body image. Therefore, inability to meet this standard could have an adverse effect on body satisfaction [174].

Social comparison, in this context, would consist of three types of motive for comparison: self-evaluation (an attempt to compare one's own body to a cultural ideal), self-improvement (an attempt to learn how to improve a specific attribute by either threat or inspiration depending on whether the similar other is a competitor or otherwise) and self-enhancement (an attempt to maintain a positive view of their own body, which aims to protect or enhance self-esteem). The first two motives involve upward comparison, whereas the last motive is related to downward comparison [175, 176]. A US study of pre-adolescent and adolescent girls showed that self-evaluation was negatively affected by self-esteem and self-perceptions of body image and physical attractiveness, whereas the other two types could enhance self-efficacy and self-perception of physical attractiveness [175].

In a study comparing the effect of health and fitness magazines and beauty and fashion magazines on body image concern, Thomsen [177] found that both types of magazines may affect individuals differently. Reading health and fitness magazines exclusively had a direct effect on body image concern. The author suggested that reading health and fitness magazines with their articles and information about diet and exercise may encourage readers to compare themselves directly in terms of specific body parts (self-evaluative comparisons). On the other hand, readers of beauty and fashion magazines can control the targets of comparison, which might be similar or dissimilar to themselves (self-improvement comparisons).

It is not surprising that for those individuals who make upward comparison with others, this can lead to decreased self-worth, lowered self-esteem, a drive for thinness and disordered eating [19, 146]. Morrison et al. [163] concluded that social comparison theory is a better model than sociocultural theory for explaining the effect of exposure to the thin body ideal on lowered self-evaluations of body image and high investment in weight loss practices among adolescents. A US study of 162 college women showed that appearance related comparison was more likely to be associated with body dissatisfaction than comparison with family members and close friends [170]. Furthermore, Hausenblas et al. [146] suggested that individuals with a high percentage of fat were more likely to report greater body dissatisfaction and negative psychological well-being than those with a low percentage of fat, as a result of comparison with cultural body ideals.

An obvious example is the effect of advertisements featuring the thin body ideal on body image dissatisfaction. Using the social comparison theory, a person who unfavourably compares themselves to the ideal may report greater body dissatisfaction. The comparison process can be explained by the satisfaction model, which is defined as *“an evaluation of some characteristic, person, experience, relationship, or other object”* [150]. Both exploratory and experimental studies demonstrated that college women who were exposed to the thin body ideal in advertisements were more likely to feel less physically attractive and want to alter their ideal body image closer to that ideal [150]. Moreover, exposure to those adverts can have a negative impact on self-perceptions of their body, as proposed by self-concept theory. This theory involves individuals’ feelings towards their physical attractiveness, which can develop from examining ones self and comparing with others or learning from others’ reactions [150]. A Canadian study of 1,543 high school students found that participants of both genders who had high scores in Universalistic Social Comparison (USC) were more likely to experience a low level of body satisfaction and engage in weight change strategies [163]. Furthermore, a study of 507 UK adolescents showed that social comparisons were highly associated with increased body dissatisfaction, particularly among those who perceived themselves as being overweight [178].

An adaptation of the social comparison theory is the “*appearance comparison model*”. This model proposes that body dissatisfaction occurs when individuals focus on images rather than on the products or information that appear in the media, which is known as “*distraction*” [174]. A study conducted with 138 young women supported the appearance comparison model, in that women who viewed advertisements containing thin models reported being more dissatisfied with their bodies and having low mood, compared to those who viewed advertisements containing products [174].

5.2.3 Cultivation Theory

This was initially developed by Gerbner in the 1960s. The theory explores the cumulative effect of watching certain types of people on television upon societal body image values, an effect without the stage of awareness [179]. The effect of advertisements can also be explained through this model. It has been found that the thin body ideal presented in television commercials can pressurise young women to conform to that ideal and overestimate their own body size [12]. It has been predicted that high exposure to television could affect a person’s perception of reality, as they may see images depicted in the media as being more realistic than the “*real-world social realities*” [19]. An Australian study of 104 college women found that heavier television watchers were less likely to be aware of the thin body ideal, which in turn might lead to them seeing those images as normal [180].

5.2.4 Absorption-addition Theory

This theory is used to explain the effect of celebrities on body image perception based on absorption and addition processes. Absorption is defined as “*a total attention, involving a full commitment of available perceptual, motoric, imaginative and ideational resources to a unified representation of the attentional object*”. In the light of celebrity worship, individuals will build a delusional relationship with celebrities without any attention required [179]. On the other hand, addition is the process of preoccupation with celebrities as one means of building an identity and social recognition. This may lead to compulsive-obsessive behaviours in order to be closely related to celebrities [179].

5.2.5 Social Learning Theory

This theory aims to investigate the immediate effect of advertisements on self-perceptions of the ideal body image. Due to the media heavily promoting the standard of thinness, an increasing number of young women try to conform to that ideal by engaging in numerous weight change strategies [181]. This theory proposed that a thin ideal body presented in the media is seen as a potential role model and an ideal for young women to try to attain, which can lead to the development of eating disturbances [181, 182]. There are two aspects with regard to this model: prevalence (the frequency of exposure to the thin ideal body) and incentives (the involvement in weight change behaviours in order to attain that ideal) [181]. It should be noted that only the drive for thinness was related to this model, principally via incentives [181]. However, it has been argued that body dissatisfaction is related to individuals' attitudes rather than being affected by media consumption [181].

5.2.6 Integration Theory

This theory focuses on "*the judgment of stimuli*". Similar to social learning theory, advertisements featuring attractive models can affect individual standards of body image attractiveness. It has been argued that regarding the professional model, not everybody will change to the new standard depending on individual judgments of stimuli. However, there is no evidence to support this argument [150].

5.3 Studies of the media's effect on body image

Most of the plausible mechanisms explaining the effect of the media on self-perceptions of current and ideal body images involve the standard of thinness for women and muscularity for men [178]. The following chapter will provide evidence concerning who are more likely to be affected by the media and how the media, particularly magazines and television, affect body image and weight change behaviours.

5.3.1 Who is affected by the media?

A number of plausible reasons have been suggested to explain why individuals are influenced by the media. Surprisingly, one study suggested that pubertal development only had a minimal effect on body image compared to the effect from social messages among adolescent girls [120]. Cusumano and Thompson [154]

hypothesised that women during adolescence were considered at most risk from the effect of media exposure on awareness and internalization of the thin ideal.

Research has shown that women and men learn to objectify the thin and muscular ideal body at a young age [22]. The media more strongly affects girls' body dissatisfaction, compared with boys. This is thought to be due to the more limited range of body shapes presented as "*good*" for women compared with men. An interview study of US adolescents' views on teen magazines showed that most participants perceived that the magazine models represented a perfect body ideal for women [183]. Furthermore, girls who desired to be thin saw thin models in the media as being attractive and receiving more attention [184]. Moreover, girls begin reading fashion magazines containing idealised media images earlier and then more frequently than boys [76].

A number of variables such as self-esteem and current weight may also have an impact on how the media affects body image [180]. A UK study of 203 adolescent girls showed that girls who felt satisfied with their weight were less concerned about their weight after viewing fat images, in comparison with those who felt dissatisfied with their weight [41].

Data from the EAT (Eating Among Teens) project indicated the characteristics of boys who reported reading fashion magazines frequently: they were more likely to be non-White, have a high BMI and have lower socio-economic status. This study did not find demographic differences between those girls who read or do not read magazines containing articles about dieting [185]. Moreover, it is not only fashion magazines that portray the thin body ideal. Most health and fitness magazines also contain articles about body shaping and nutrition featuring ideal model images. This could motivate readers to engage in body-focused comparisons [177].

On the other hand, reading magazines did not affect the body image of all readers. For example, those readers who paid more attention to the contents in the magazines were less likely than those who focused on models in the magazines to develop disordered eating behaviours [186], high body dissatisfaction and mood disturbance [174]. Moreover, it has been found that not all media consumers will be affected by

the idealised body images, but that this depends on an individual's standard for these ideals compared to their social settings [187]. One study supported the argument that there was no relationship between total media use and the importance of physical appearance amongst adolescent girls, with the exception of music videos. This relationship was stronger among African-American than White girls [188].

A meta-analysis illustrated that exposure to thin media images negatively affects body image, particularly in adolescent women, those with high levels of body image concern and those with high internalization of the thin body ideal [173]. An experimental study of 139 college women showed that after exposure to advertisements containing thin and attractive women, participants with high body image concern and high levels of internalization were most at risk of being affected by these societal messages [189].

In summary, despite the fact that the media heavily promote cultural body images as standards of thinness and muscularity for women and men, women were more likely to suffer the most deleterious effects from the media, particularly young adolescents, those with high internalization of the thin body ideal, those with high body image concern and frequent magazine readers.

5.3.2 The effect of exposure to the cultural body ideals on body image

There are two types of methods for examining the effect of media exposure: questionnaires and experiments. In terms of questionnaires, most of them asked participants to report on the types of magazines or TV programmes and the time spent on each media. The examples of these questionnaires are The Media Exposure Scale (MES) and The Participant Magazine Assessment Tool (PMAT). For the experimental studies, each participant viewed either pictures or programmes which contained women conforming to the thin ideal [190].

A US study of 238 college women found that high exposure to the media was related to the endorsement of the female gender-role, which could result in high body image dissatisfaction via the process of internalization of the thin body ideal [155]. Moreover, exposure to the thin body ideal depicted in the media has a negative effect not only on body satisfaction but also on mental health [189].

A number of experimental studies among women across all ages showed that high exposure to the thin ideal may lead to body size overestimation [18, 21], increased body dissatisfaction [21, 148, 150, 189-191], lowered self-esteem [18], fear of being fat [148], preoccupation with the thin ideal body [21, 148], depression [18] and low mood [189, 191]. Moreover, a longitudinal study of 80 adolescents demonstrated that the thin body image had an effect on girls' body dissatisfaction and drive for thinness, but for boys the effect was only on their drive for thinness [190].

One Australian study also supported the idea that idealised media images not only affect body dissatisfaction among girls but also increase the levels of body image concern among boys [30]. It has been found that even though levels of body satisfaction did not change after adolescent boys were exposed to the muscular ideal, for those boys with high internalization such exposure may lead to negative feelings about themselves and depression [172].

In conclusion, the promotion of thinness and muscularity in the media has a great impact on body dissatisfaction and body image concern in both women and men.

5.3.3 The effect of exposure to magazines and television on body image

A number of studies found that watching television or reading magazines was associated with body dissatisfaction [21, 180, 185, 192]. However, it has been reported that television and magazines can affect individuals' body image perception differently [180]. This might be due to the fact that those who read fashion magazines may be purposively looking for information about diet, beauty and exercise, whereas television viewers are passively exposed to the thin body ideal. A study comparing the effect of magazines and television on body dissatisfaction found that reading fashion magazines, but not watching television could increase the level of internalization of the thin body ideal, resulting in greater body dissatisfaction [180].

It is evident that magazine exposure has a direct effect on body image dissatisfaction in both genders. A US study of adolescents and young adults showed that men who read sports magazines frequently were more likely to feel dissatisfied with their bodies as a result of comparing themselves with the models in the magazines. This effect was also found among women who read fashion magazines [186]. Another

study of 150 Canadian college students showed that men who read fitness magazines and women who read beauty magazines reported high levels of body image concern [21].

Moreover, a US study of adolescents suggested that the more adolescents read fashion magazines, the greater their body dissatisfaction, the lower their levels of self-esteem and the greater their levels of depressive moods [185]. Turner et al. [148] also confirmed that women who were exposed to fashion magazines were more likely to feel dissatisfied with their bodies, afraid of fatness, obsessed with weight and preoccupied with being thin. Interestingly, Levine et al. [193] found that adolescent girls who read magazines for information about the thin body shape and weight change were more likely to report high levels of body dissatisfaction than those who did not pay much attention to such magazines.

Furthermore, it has been suggested that magazine exposure is associated with internalization of the cultural body ideals, which are thin for women and muscular for men. Another study also showed that “*appearance magazine exposure*” affected girls’ body dissatisfaction via the internalization pathway [21, 194]. A US study of 89 college men found that high exposure to men’s magazines was related to a desire for greater muscularity [195]. On the other hand, it has been argued that the viewing of muscular ideal advertisements had no effect on body dissatisfaction among boys as they viewed the media as having positive or no effect on their body image [37].

Evidence suggests that exposure to advertisements or programmes on television can affect women’s self-perception of current body image. Myer [12] emphasised that “*body shape perception can be changed by watching less than 30 minutes of television*”. Hargreaves and Tiggemann [191] investigated the effect of television commercials on Australian adolescents. Their results showed that after viewing the idealised body image of men and women, most participants reported greater appearance comparison and a more negative mood, compared to those who were exposed to non-appearance commercials.

A study of the effect of TV commercials on body image among US female college students showed that exposure to advertisements featuring the thin body ideal could

lead to body size overestimation [12]. Harrison and Cantor [181] found that there was a relationship between watching television and attitudes towards eating and thinness among men. A US study investigating the effect of sexist advertisements on body dissatisfaction among 108 undergraduate students showed that among participants who were exposed to sexist adverts: women reported perceiving themselves heavier, while men perceived themselves thinner, resulting in greater discrepancy between the perceived current and ideal body image [18]. Tiggemann [180] found that there was a negative correlation between television watching and awareness of the thin ideal. Moreover, this study showed that frequent television-watching was associated with poor self-esteem.

5.3.4 The effect of magazine reading on weight control behaviours

A number of studies have shown that frequent reading of fashion magazines has a direct impact on engaging in weight change strategies [185, 192]. Data collected from the Growing up Today Study showed that a desire to look like the models in the magazines was associated with high levels of engaging in physical activity [196]. Reading health and fitness magazines can lead adolescents and young adults of both genders to develop eating disturbances, compared with reading sports or fashion magazines. It has been reported that the frequency of reading fashion magazines could perpetuate bulimic behaviour among girls and decrease body satisfaction among boys [186]. Moreover, reading health and fitness magazines was correlated with an increased drive for thinness and the development of eating disorder behaviours such as vomiting, fasting and laxative use among girls and an increased tendency to use weight gain products in boys [186]. A study of women college students indicated that reading health and fitness magazines could increase their levels of body image concern, especially through their beliefs about men's expectations of female thinness [177].

The literature suggests that the media's effect on men may not be as great as it is for women, with studies portraying the effects of viewing such images as lower level or even neutral for men. Men's magazines, such as sports, health and fitness magazines, containing images of the muscular ideal body and articles about how to gain muscle can reinforce the rewards of attaining this ideal [186]. A US study of adolescents and college students showed that males who read sports magazines reported wanting to

be more muscular due to paying more attention to the muscular model in these magazines, which could lead to the use of bodybuilding products [186].

This was consistent with a study by Hatoum and Belle [195] showing that high exposure to men's magazines was associated with the use of beauty products, body building supplements, exercising and other behaviours related to muscle and fitness. This study also found a positive relationship between watching music videos and the use of bodybuilding products.

5.4 Summary

The media are known as a major influence in transmitting the thin and muscular ideal body images to both women and men. Evidence suggests the media can negatively affect individuals' body image perception as well as their weight control behaviours through exposure to the cultural body ideals depicted in magazines or on television. However, this study will mainly focus on sociocultural theory, which explains how individuals develop their body dissatisfaction through a process of awareness and internalization of cultural ideals.

6. WEIGHT CONTROL PRACTICES

6.1 Reasons for changing weight

There are two main reasons given by individuals who attempted to change weight: appearance and health. There is a great deal of evidence showing that among women who had been on a diet, appearance was cited as their main motive, whereas health and fitness were frequently mentioned by men who tried to lose weight [23, 29, 75, 197]. However, two studies found that ‘improving health and fitness’ was cited as the main reason for losing weight in both genders [198, 199]. Consistent with the findings on dieting, women used exercise as a method for losing weight or toning their bodies, whereas men exercised in order to control their weight and improve their health [3]. Regarding the reasons for weight gain, improved physical strength and increased sports performance were the main reasons [29, 46].

When considering appearance as a reason for weight loss, there are a number of motives that pressurise women to become thinner. An interview study with young women showed that fitting in with a societal setting was the most often cited reason for women to change the way they looked. However, around one-third of women felt that if they changed their appearance, it would improve their personal attributes such as confidence [23]. Sexual attractiveness has been cited as another reason for women to be on a diet [64]. Moreover, Furnham and Greaves [9] found that increased self-confidence and self-esteem were cited as the reasons for dieting, other than “*wanting to be thin*”. One study illustrated that losing weight for a special occasion, such as a wedding, was considered a powerful motivator for short-term weight loss [197].

As most women wanted to lose weight in order to improve their appearance, dietary restraint and eating disorders have become a “*behavioural phenomenon*”, and as such considered normal by many people [65, 75]. It has been reported that dieting is also associated with the use of unhealthy weight control methods, including fasting, diet pills and vomiting [198]. More alarmingly, vomiting and laxative misuse are also seen as normal weight control methods even among those without an eating disorder diagnosis [62]. Losing weight for appearance reasons can also lead to a high level of body dissatisfaction and a low level of self-esteem [200].

Furthermore, Brien et al. [199] found that respondents who wanted to lose weight for health reasons were more likely to be satisfied with their bodies than those who focused on appearance and mood. On the other hand, it has been found that losing weight was associated with a positive feeling towards both physical and mental well being [64]. One study also found that dieting women perceived themselves to be in good health [198].

6.2 Prevalence of weight change practices among young adults

Evidence suggests that there are several factors associated with weight loss behaviours, including gender, body weight, level of education and young adulthood status. A recent survey of university students from 22 countries found that women were twice as likely as men to report trying to lose weight [201]. A large US telephone survey showed that among young adults aged 18-29 years, over one-third of men tried to maintain their weight, whereas more than 40% of women tried to lose weight [202]. The pursuit of thinness among women can lead to exercising, dieting and cosmetic surgery [99]. Therefore, an immense number of young adults have reported engaging in weight loss behaviours, particularly women. In the UK, it has been estimated that more than 90% of women have dieted at some stage of their life [3]. Nearly 80% of women and 30% of men aged 18 to 24 years in the US had been on a diet [203]. Moreover, it has been found that over 80% of US college women reported a desire to lose weight, in particular about half desired to lose between 1 and 9 pounds, while the remainder wanted to lose more than 10 pounds [204].

It was also reported that the prevalence of dieting was associated with BMI, regardless of gender. When considering respondents who tried to lose weight, the majority of men (55%) were considered overweight, while 36% of women were overweight and almost 40% of women were normal weight [202]. A survey of US young adults showed that women who considered themselves as being overweight were more inclined to engage in dieting and have a desire to lose weight than those who perceived themselves as being normal weight [52]. Surprisingly, evidence suggests that not only normal weight women want to lose weight but also normal weight men [52]. It also has been found that respondents with obesity problems and low levels of education were unlikely to choose physical activity as part of their weight loss method [202].

As far as the effect of age is concerned, women aged between 18 to 29 were more likely than other age groups to engage in dieting behaviours, while men across all age groups showed no significant difference in the percentage of trying to lose weight [202]. A comparison study between college students, graduates and non-students showed that dieting behaviours were more prevalent among college graduates, regardless of gender [203].

In this section, weight change strategies are divided into two principal kinds. First are healthy weight change strategies which include changing dietary intake, exercising and engaging in weight loss programmes. Second are unhealthy weight change strategies which include the use of weight control products and purging.

6.2.1 Healthy weight control strategies

There are several healthy ways to lose weight, such as dieting, exercise and following weight loss programmes. A number of studies showed that reducing calorie intake and increasing exercise are the most commonly used methods to reduce weight among young adults [51, 52, 202, 205]. Dorociak and Vincent [206] found that among 470 US female students, nearly 70% had been on a diet at sometime, particularly those who perceived themselves as being overweight. Moreover, a study of 226 US college students showed that over 60% of men reported exercising to lose weight, while almost the same number of women controlled their calorie intake [52].

However, some studies were contradictory to these findings. A study of weight loss strategies among female college students showed that 80% chose exercising, 59% consumed low-fat foods, 51% strictly controlled their diet and 40% restricted their calorie intake [207]. Moreover, changing eating behaviour such as reducing calorie intake was the most commonly used method for both genders. 36.7% of adult men and 34.2% of women aged 18 years and over reported using a combination of dieting and exercise [202]. A recent study of US college women reported the use of specific strategies, 20% complied with Atkins or South Beach diets and 11% joined Weight Watchers [207].

A US survey of college students demonstrated that a large number of respondents used their own independent strategies such as dieting for losing weight rather than joining weight loss programmes [208]. In terms of activities involving calorie expenditure, women were more inclined to increasing routine exercise, whereas most men reported using specific exercise such as sit-ups and push-ups [208]. The majority of respondents in this study chose to restrict their food intake rather than controlling calorific intake. Furthermore, women were more likely to use “*stimulus control strategies*” for weight loss, including not keeping certain foods in the home, “*serving smaller portions of foods*” and avoiding visits to fast-food restaurants [208].

Evidence suggests that symptoms related to eating disorders such as the use of diet pills, vomiting and overeating can be found among dieters. It has been reported that young adults who frequently diet are more likely to suffer from a number of physical and psychological problems such as depression, difficulty in maintaining weight and decreased metabolic rate [203]. However, it should be noted that dieters, who usually control their calorie and food intake, tend to have a good knowledge of nutrition due to their frequent reading of articles about diet and body shape in newspapers and magazines [51]. Moreover, research suggests that engaging in physical activity can weaken the relationship between BMI and body dissatisfaction by increasing muscle mass and improving appearance [209].

Behavioural weight loss programmes have been well documented as being effective for weight loss. However these programmes have a number of problems including the length of time required to participate and the risk of regaining weight within three years. Normally, the average dieting period lasts 4-6 weeks, which is reflected in the low number (12.6%) who report staying on a diet for more than one year [205].

An increasing number of young adults report being on vegetarian diets over the past few years [205]. In terms of engaging in a particular diet, a survey of 428 US undergraduate students showed that most vegetarian participants were more likely to stay on their diet longer than weight-loss participants. Most participants referred to “*lost interest/bored*” and “*missing certain foods*” as the main reasons for stopping a weight-loss diet. Interestingly, “*weight-loss*” is endorsed as a reason for engaging in vegetarianism. This may imply that the change in eating habits was seen as another

way to lose weight. On the other hand, participants were more likely to link becoming vegetarian with health benefits rather than weight loss [205].

6.2.2 Unhealthy weight control strategies

In terms of unhealthy ways to alter weight, several techniques have been used among young adults, including diet pills, steroid products, laxatives, vomiting and smoking.

A survey of weight loss strategies among college students showed that over 60% of women had engaged in at least one unhealthy weight loss strategy, including the use of diet pills, laxatives and smoking, compared with 26% of men [208]. A recent US survey of 484 young women found that nearly one-third of the respondents had experience of using diet pills over the last 12 months [210]. In relation to unhealthy weight loss strategies, a US study of female college students showed that 9% reported smoking cigarettes, 5% vomited and 3% used laxatives. Interestingly, over one-third of respondents used Over-the-Counter (OTC) meal replacement drinks, 26% took dietary supplements, 18% consumed meal replacement bars, 11% drank diet tea and 3% used products containing Chromium Picolinate [207].

Peters et al. [203] compared the prevalence of dieting between college students, college graduates and non-student populations. Over 25% of women in each group reported using non-prescription weight loss products, whereas only a small number of men selected this method. Non-student women reported using this method more frequently than the other two groups. In terms of weight fluctuation, in comparison with the other two groups, non-student women had more experience of losing and regaining 10 pounds within the last two years. It has been suggested that repeated cycles of losing and regaining weight can lead to difficulty in losing weight in the future.

As far as weight loss strategies are concerned, the use of diet pills is one of the most popular methods for losing weight, particularly for women [206]. Dorociak and Vincent [206] found that among 470 US female students, around 40% had experience of using diet pills; however only 8% were currently taking them. Almost 80% of users lost weight; however more than 60% regained the weight lost. Over one-third experienced at least one side-effect associated with the use of weight loss

pills. Lack of knowledge about diet pills, especially their mode of action and duration of use, were also highlighted in this study.

The preference for a large and muscular body shape can lead to the use of anabolic steroids in men [13]. A US study of 154 male college students found that over one-quarter had experience of using weight gain products, including steroids and creatine [54]. A survey of 687 UK students showed that around 4% of men and 1% of women had experience of using steroid products. Men, particularly body builders, weight-lifters and rugby players, were identified as potential steroid users [211].

It is reported that smoking has been used as a strategy for weight loss [49]. One US study of 1,852 college students showed that 4% of the women reported smoking to control their weight, while 16% thought smoking could help them to lose weight. Meanwhile, 5% of men who smoked thought smoking could increase their weight. Women who smoked were more likely than those who did not to use weight loss pills and exercise as methods of losing weight [49].

6.3 Weight change strategies in other age groups

6.3.1 Children

Exercise and dieting were the most frequently used methods for losing weight among children of both genders [29, 31], whereas “*eating as much as possible*” was used as a method for weight gain [29]. A study of 62 US children found that improving sports performance was cited as the main reason for gaining weight, while experiences of teasing and the wish to improve their appearance were the most cited reasons among girls who wanted to lose weight [29]. A large study of 1,597 US children in grades 4 and 7 (aged around 10 and 13 years) showed that those from White ethnic groups, girls, those from families with high SES and older children were most likely to report trying to lose weight. When considering unhealthy weight loss methods, children who tried to lose weight were more likely to report vomiting than diet pill use [31].

6.3.2 Adolescents

Evidence suggests that adolescent girls were trying to lose weight, whereas boys were trying to gain weight [43, 212-214]. A number of studies conducted in Western countries demonstrated that controlling dietary intake and exercise are the most commonly used methods among dieting adolescents of both genders [43, 45, 88, 212, 214-216]. Surprisingly, self-perception of being overweight was associated with dieting [43, 70] but not exercise [44].

However, in terms of unhealthy weight control strategies, studies showed that between 2 and 10% of girls reported using diet pills, laxatives or vomiting [44, 88, 89, 212, 213, 216, 217], whereas between 5 and 10% of boys had experience of using weight gain products such as steroids and protein supplements [36, 141, 215]. Interestingly, a survey of 163 US adolescents found that most participants were uncertain about the function of the supplements but believed that supplements could work for them [140].

Moreover, apart from gender, a number of factors such as weight perception, Body Mass Index, age, ethnicity and socioeconomic status (SES) can affect weight change behaviours. Research found that adolescents who were overweight [36, 45, 215, 218], older [48, 70], from White ethnic groups [44, 48, 219, 220] and classified as low SES for boys [48, 219, 220] and high SES for girls [48, 129, 220] were at risk of engaging in weight control behaviours (Table 4 for details of the studies).

Table 4: Summary of studies on weight control practices in adolescents

Authors	Method	Age of participants	Key findings	Comments
McCabe and Ricciardelli (2001)[36]	Interview	40 Australian boys aged 13 to 15 years	Half of the boys wanted to change weight: 12 wanted to lose weight and 8 wanted to gain weight. Only two boys used weight gain supplements. Most of them believed that exercise can help to increase body size. BMI was positively correlated with engaging in methods for weight loss.	Mixed ethnicity and SES background. Examined the effect of age group and BMI.
Serdula et al. (1993) [43]	The 1990 YRBS (questionnaire)	11,631 US adolescents from grade 9-12 (around aged 15 to 18 years)	44% of girls tried to lose weight and 26% of boys attempted to gain weight. Exercise and skipping meals were the most frequently used methods for weight loss. For weight loss methods, males frequently used exercise, whereas females mostly chose to skip meals. Self-perception of being overweight was strongly correlated with the use of weight change strategies.	Survey across 50 states in the US. Only examined the prevalence of weight loss behaviours.
Felts et al. (1996) [44]	The 1990 YRBS (questionnaire)	11,631 US adolescents from grade 9-12 (around aged 15 to 18 years)	Among those who perceived themselves overweight, 76% were attempting to lose weight: of those 74% were girls. For weight loss methods: 67% had skipped meals, 2.5% used diet pills and 2% had used vomiting. Boys were more likely to exercise to lose or control weight than girls. Respondents who perceived themselves overweight were less likely to engage in exercise activity. White females and Black males were more likely than other ethnic groups to report trying to lose weight. Whites>Hispanics>Blacks of both genders exercised to lose weight.	Focused on the prevalence of weight loss practices. Examined behaviours of those who misperceive their weight.

(Continue on the next page)

Table 4 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Grigg et al. (1996) [45]	Questionnaire including BMI measurement and the prevalence of weight control practices	869 Australian adolescent girls, aged 14 to 16 years	Among those trying to lose weight, 12% were underweight, 64% were normal-weight and 23% were overweight. Exercising and controlling fat and sugary foods were commonly used among dieting girls. Almost 60% reported using unhealthy weight loss strategies such as fasting and using diet pills.	Mainly focused on unhealthy weight loss behaviours.
O'Dea and Rawstorne (2001) [46]	Questionnaire about weight gain strategies	397 Australian boys aged 13 to 18 years	Changing dietary method was commonly used for weight gain by boys, followed by exercising. Increasing physical strength and improving sports performance were the most cited reasons for weight gain.	Examined the prevalence of weight gain practices and behaviours.
Wardle and Marsland (1990) [48]	Questionnaire including BMI and methods of weight control	864 British adolescents, aged 11 to 18 years	Older adolescents were more likely to try to lose weight than the younger. In contrast to the results for boys, girls from high SES reported wanting to lose weight, compared to lower SES girls. White>Black~Asian girls wanted to lose weight. There was no ethnic difference in weight gain attempts among boys.	Compared the effect of age, ethnicity and SES.

(Continue on the next page)

Table 4 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Davies and Furnham (1986) [70]	Questionnaire including incidences of weight change and weight perception	182 British girls, aged 12 to 18 years	Almost 50% of participants wanted to lose weight. Self-perception of being overweight was associated with attempting to lose weight. Older girls were more likely to control amount and types of foods and to exercise than the younger girls.	Compared weight control behaviours and age groups.
Neumark-Sztainer et al. (2002) [88]	The Project Eating Among Teens (EAT) (questionnaire)	4,746 US adolescents, mean age of 15 years	1.7% of boys and 6.6% of girls reported using diet pills. 6.7% of girls and 2.4% of boys had vomited to lose weight. Exercise and eating healthily were frequently used methods for weight loss among both genders. White girls were more likely than other ethnic groups to try to lose weight. African and Asian boys were more likely than other ethnic groups to engage in unhealthy weight control strategies.	Examined the prevalence of weight control practices across ethnic groups.
Garry et al. (2003) [89]	The 1999 YRBS (questionnaire)	6,957 US students grades 6 to 8 (around aged 12 to 14 years)	6% and 7% of participants reported using diet pills and vomiting or laxatives, particularly women and Whites.	Only two ethnic groups were compared.
Wertheim et al. (1997) [109]	Interview	30 Australian adolescent girls, mean age of 15 years	Girls cited “ <i>feeling fat</i> ” as the main reason for dieting.	Limited SES and ethnicity.
Wardle et al. (2004) [129]	Questionnaire including BMI and weight control behaviour	1,248 British adolescent girls, aged 13 to 15 years	Girls from high SES reported high dietary restraint and engaging in healthy weight control behaviours, compared to lower SES girls	Compared the effect of SES.

(Continue on the next page)

Table 4 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Field et al. (2005) [141]	Survey of products used for improving appearance or muscle mass (questionnaire)	6,212 girls and 4,237 boys in the US, mean age of 15 years	8% of girls and 10% of boys used protein supplements. Creatine was used by boys more than girls. Use of unhealthy weight control products associated with high body image concern.	Examined the prevalence of weight gain products
Krowchuk et al. (1998) [212]	The 1995 modified version of YRBS (questionnaire)	2,331 US adolescents, aged 11 to 16 years	50% of girls were trying to lose weight, while 23% of boys were trying to gain weight. For weight loss strategies among girls: 45% dieting, 71% exercising, 10% vomiting/laxative use and 8% diet pill use.	Only examined the effect of gender.
McVey et al. (2005) [213]	Questionnaire including weight loss and muscle-gaining behaviour and BMI measurement	670 Canadian boys and 788 girls, aged 10 to 14 years	31% of girls were trying to lose weight, whereas 42% of boys were trying to gain weight. Among girls who tried to lose weight, 57% exercised, 1.6% used diet pills, 1.8% vomited, 3.6% joined weight loss programmes, 17.3% skipped meals and 1.9% used laxatives or diuretics. Among boys who tried to gain weight, 20.1% ate more protein, 7.1% took weight gain products, 33.5% lifted weights and 68.6% exercised.	Examined the prevalence of both weight loss and weight gain methods
Middleman et al. (1998) [214]	The 1993 YRBS (questionnaire)	3,055 students grades 9 to 12 in the US (aged around 15 to 18 years)	Over 60% of females were trying to lose weight, while over one-third of males were trying to gain weight. Dieting and exercise were the most commonly used methods to lose weight in both genders. Increasing physical activities cited as the method for weight gain among males.	Examined dieting and exercising behaviours. No comparison across ethnic groups.

(Continue on the next page)

Table 4 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
French et al. (1995) [215]	Questionnaire including the prevalence and methods of losing weight	1,015 US female students grades 9 to 12 (aged around 15 to 18 years)	Healthy weight loss methods, such as increasing exercise and eating more vegetables and fruit, were more often chosen than unhealthy weight loss behaviours, including diet pill and laxative use. Overweight girls were more likely to be on a diet than normal weight girls.	Examined various methods for weight loss. Majority were Whites.
Lowry et al. (2002) [216]	The 1990 YRBS (questionnaire)	15,349 US adolescents grades 9 to 12 (aged around 15 to 18 years)	For weight control methods: 58% used exercise, 40% chose to reduce fat and calorie intake, 13% tried fasting, 8% used weight loss products and 5% vomited or used laxatives. Women>men reported engaging in weight loss behaviours.	No comparison across ethnic groups. Examined the effect of dieting and exercise.
Cance et al. (2005) [217]	The 2001 National Household Survey on Drug Abuse (questionnaire)	4,292 US adolescent girls, aged 12 to 17 years	Almost 10% had experience of using laxatives or vomiting for weight loss. Laxative use and vomiting was associated with the use of Ecstasy.	Limited comparison results across ethnic and SES groups.
Field et al. (2003) [218]	The Growing Up Today Study collected from years 1996 to 1999 (questionnaire)	8,203 American girls and 6,769 boys, aged 9 to 14 years	The prevalence of dieting among girls increased over a 3 year period but remained constant in boys. BMI was positively correlated with dieting in both genders. Dieters were more likely than non-dieters to report binge-eating, to engage in physical activity, to control their food intake and to gain more weight.	A longitudinal 3-year study.

(Continue on the next page)

Table 4 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Irving et al. (2002) [219]	The Project EAT survey (questionnaire)	4,746 US adolescents, aged 11 to 18 years	<p>5% of males vs. 3% of females reported using steroids. White ethnic group and low SES males had the highest steroid use.</p> <p>Males who used steroids were more likely than non-users to report being dissatisfied, lower self-esteem, depressed mood and attempting suicide.</p>	Various SES, age group and ethnicity.
Neumark-Sztainer et al. (1999)[220]	The Voice of Connecticut Youth Survey in 1995-1996 (questionnaire)	9,118 US adolescents from grade 7, 9 and 11 (around aged 13, 15 and 17 years)	<p>More boys reported eating more food or taking supplements for weight gain than girls.</p> <p>Adolescents from low SES reported engaging more in weight change behaviours, compared to high SES.</p> <p>Prevalence of dieting among girls: Caucasian>Asian>Multiracial>Hispanic>African Americans.</p> <p>Prevalence of exercising among boys: Asian>Caucasian>Hispanic>Multiracial>African Americans.</p> <p>Whites reported engaging in less weight gain behaviours than other ethnic groups.</p>	Compared the effect of SES, age group, BMI and ethnicity
Roberts et al. (2001) [221]	Questionnaire including incidence of dieting and perception of dieting	140 British girls, aged 12 to 13 years	<p>Over one-third had been on a diet and half of those were currently dieting.</p> <p>Among dieters, “<i>dieting</i>” means eating less or reducing calories, fat and sugar, whereas for non-dieters it means healthy behaviours.</p>	Compared the concept of dieting between dieters and non-dieters.

6.3.3 Adults

Evidence shows that around 40% of women and 20% of men report trying to lose weight [43, 222]. Similar to the findings of studies of young adults and adolescents, controlling dietary intake is the most frequently used method for changing weight among adults in the US and Europe, followed by exercise [59, 86, 222-225]. Interestingly, a US study showed that respondents who lost weight on their own had less difficulty in maintaining weight but found it harder to lose weight at the beginning than those who joined weight loss programmes and used specific weight loss products [223].

Although the prevalence of weight loss behaviour is different for men and women, age, SES and BMI can also determine this behaviour. It has been reported that participants who were classified as overweight [59, 198], higher SES [43, 224, 226] and aged less than 65 [43, 222] had the highest prevalence of trying to lose weight. It should be noted that ethnicity had only a small effect on the prevalence of dieting among adults [43, 198, 224] (see Table 5 for details of the studies).

Table 5: Summary of studies on weight control practices in adults

Author	Method	Age of participants	Key findings	Comments
Serdula et al. (1993) [43]	The Behavioral Risk Factor Surveillance System (questionnaire)	60,861 US adults aged over 18 years	38% of women and 24% of men were trying to lose weight. There was no significant ethnic difference among women trying to lose weight. Hispanic and higher SES men were more likely than other ethnic and SES groups to report trying to lose weight. As age increased, the prevalence of trying to lose weight decreased.	Various age groups, ethnicity, levels of education and BMI.
McElhone et al. (1999) [59]	Questionnaire including FRS, recent weight changes and strategies for weight loss	15,239 adults across 15 European countries, aged over 15 years	Diet was the most commonly used method among women, whereas men chose to exercise to lose weight. BMI was associated with a desire for weight loss in both genders.	Compared the effect of BMI and body image perception on weight change practices.
Lappalainen et al. (1999) [86]	Survey about recent weight loss practices (questionnaire)	15,239 adults across 15 European countries, aged over 15 years	For both genders, dieting was the most frequently used method to lose weight, followed by exercise and a combination of both methods. Women were more likely than men to have changed weight in the past 6 months. Almost 40% of participants, especially women, had changed weight in the past 6 months. Age and educational levels had only a small effect on weight change behaviours.	Compared the prevalence of weight change behaviours among European adults.

(Continue on the next page)

Table 5 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Biener and Heaton (1995) [198]	The 1992 Weight Loss Practices Survey (questionnaire)	1,649 US adults aged 18 and over	<p>Normal weight women were more likely than men to attempt to lose weight. There was no ethnic difference among men who were trying to lose weight. Dieters reported more healthy behaviours than non-dieters, such as less smoking.</p> <p>13% of normal-weight dieters reported using at least one unhealthy weight loss method.</p> <p>25% of those dieters reported using a combination of dieting and exercise for weight loss.</p> <p>Improving health was cited as the main reason for weight loss among women.</p> <p>High BMI was associated with attempts at weight loss.</p>	Examined weight loss behaviours among normal weight women in two groups: dieters vs. non-dieters and Black vs. White.
Kruger et al. (2004) [222]	The 1998 National Health Interview Survey (questionnaire)	32,440 US adults, aged over 18 years	<p>24% of men and 38% of women were trying to lose weight.</p> <p>For both genders, changing eating habits was the most selected method for weight loss, followed by exercising.</p> <p>Participants who were aged over 65 had the lowest prevalence of trying to lose weight.</p>	Compared the effect of age, ethnicity, education, marital status and BMI.
McGuire et al. (1998) [223]	Questionnaire including BMI and method of weight maintenance	893 US adults (mean age of 44.6±11.7 years), who maintained their weight loss for at least one year	Controlling dietary intake was frequently used for weight control. Participants who lost weight on their own reported less difficulty in maintaining their new weight, compared to those who joined a programme or used weight loss supplements.	Majority of participants were females and Whites.

(Continue on the next page)

Table 5 (Cont.)

Authors	Method	Age of participants	Key findings	Comments
Neumark-Sztainer et al. (2000) [224]	Questionnaire including weight control behaviours and demographic information	3,832 US adults, mean age of 43.5 years	SES was associated with weight control practices in both genders. Older men were more likely to be on a diet than younger men. There was no ethnic difference in dieting prevalence. The majority of participants reported using healthy weight loss strategies such as exercise and eating more fruits and vegetables. 6.5% of women and 2.5% of men had used diet pills or laxatives.	Compared the prevalence of weight control practices across age groups, BMI, SES, levels of education, ethnicity and area of residence.
Bendixen et al. (2002) [225]	Questionnaire including the methods used for weight loss, weight loss achievement and maintenance	2,446 Danish adults aged over 17 years	Dietary change was the most commonly used method among respondents of both genders, followed by increasing exercise. Men were more likely to be successful in weight loss than women. Dieting products were negatively associated with weight loss achievement and maintenance.	Compared the differences between age groups, BMI and the prevalence of slimming between 1992 and 1998.
Jeffrey and French (1996) [226]	Questionnaire including weight loss history and weight control practices	998 US women, aged 20 to 45 years	Women in higher SES groups were more likely than other SES groups to be sensitive about weight gain, to be on a diet and to use healthy weight control practices. SES had no effect on the use of unhealthy weight loss methods.	Only examined the effect of SES on weight control practices among White women.

6.4 Problems of weight loss strategies

6.4.1 Weight loss products

The area of most concern is the safety of weight loss products, particularly of some ingredients which have been shown to have harmful side effects as can be seen in Table 6.

Table 6: Serious side effects of ingredients found in weight loss products

Name of Ingredient	Major Side Effects
Ephedra or Ma Huang [227]	High blood pressure, Stroke, Seizures
Chromium Picolinate [228]	DNA damage which could lead to cancer
Triiodothyroacetic acid [229]	Heart attacks and Stroke
Dinitrophenols [230]	Hyperthermia, Dehydration, Tachycardia, Restlessness, Manic behaviour, Convulsion
Aristolochic acids [231]	Genotoxic carcinogens which could lead to intestinal nephropathy

Even though many studies showed that ephedrine and ephedra may promote short-term weight loss of about 0.9 kg per month, they are related with two to three times *“the risk of psychiatric symptoms, autonomic symptoms, upper gastrointestinal symptoms, and heart palpitations”* [232].

After the withdrawal of a combination of phenteramine and fenfluramine from the slimming market, herbal products have been widely used throughout the weight loss industry [233]. In November 2000, the Food and Drug Administration (FDA) in the US withdrew all products containing phenylpropanolamine (PPA) including OTC weight loss products from the market due to research which found an association between PPA use and the risk of a hemorrhagic stroke [234]. In the early part of 2004, the US FDA withdrew all weight control products containing Ephedra as a result of its harmful effects on human health [235].

Although some products claim to use natural ingredients, the safety of these products can not be guaranteed. Unlike medicines, weight loss supplements are not obliged to prove their safety or efficacy by vigorous testing. Moreover, the US regulations for dietary supplements only require evidence showing that the products do not cause

toxicity in humans, they do not require any evidence proving their efficacy [235]. Consequently, this may contribute to the difficulty in establishing their claims to efficacy or even detecting the long-term effects of using weight control products.

6.4.2 Very Low Calorie Diets (VLCD)

The idea of VLCD is to consume specially formulated products instead of two main meals and restrict the calorie intake of the remaining meal to less than 600 calories. A report by Slim Fast Foods Company showed that people who used meal-replacement programmes can maintain 10% of their weight loss for 2 years [236]. Although these products can help to lose weight, the safety of long term use is not established and concerns have been raised about the effects on heart muscle. Moreover, it has been reported that people who used VLCD experience problems maintaining their new weight due to a lack of healthy eating behaviours. It has been recommended that these products should not be used for more than 4 weeks and should be combined with a nutritionally balanced diet and exercise [237].

6.4.3 Group meetings

Traditionally, this method is considered to be an effective method for losing weight. Weight Watchers[®], one of the most successful organisations, is a programme developed for helping dieters to share their opinions and receive suitable plans from a dietician [238]. A report by Weight Watchers[®] showed that more than 50% of participants have maintained their weight for two years and around 30% may remain the same weight for five years [236]. Interestingly, Furnham and Boughton [65] found that women attending Weight Watchers meeting reported more dissatisfaction with their bodies than female aerobic exercisers and a control group.

6.4.4 Weight loss diets

Although dieting might be considered as intuitively less harmful than diet pill or laxative use, several reports show that dieting can cause a number of health problems ranging from fatigue and headaches to eating disorders and stunting growth [76]. The most concerning problem is the use of popular or fad diets. There are two well-known categories. First are high fat, high protein diets such as the Atkins[™] diet. The main drawback of pursuing these diets is ketosis, which can lead in turn to many other health problems, for example; an unpleasant taste in the mouth, nausea, an

increased risk of cardiovascular diseases and raised serum cholesterol levels. The second category involves very low-fat diets. Even though these diets may reduce cardiovascular risk, many studies show that engaging in a very low fat diet may promote higher triglyceride levels, reduce high density lipoprotein levels and increase the risk of essential fatty acid deficiency [239].

6.4.5 Weight loss programmes

These involve developing an individualised plan, consisting of a meal plan, behaviour modification and an exercise regime. Consumer reports showed that around 20% of dieters used commercial weight loss programmes. Overall, most participants can lose approximately 10% of their original weight, but more than one-third regained the weight within one year and almost all do so within five years [236]. Although these methods seem to be harmless, the long-term success rate of using weight loss programmes is still inconclusive.

6.4.6 Pharmacological and surgical interventions for weight loss

According to the recent NICE guidelines for obesity management [240], two prescribed medication are recommended to use for maintaining weight loss, which are orlistat and sibutramine. It has suggested that this intervention will be beneficial for those patients who can not reach their target weight loss or can not lose more weight from engaging in any behavioural changes alone. Moreover, it has been recommended that both treatments should be prescribed for those who have BMI= 30 kg/m² or over or those have BMI= 28 kg/m² (for orlistat) and =27 kg/m² (for sibutramine) with obesity-related risk factors such as type 2 diabetes and dyslipidaemia and these medications should be used for a three-month period unless patients have lost at least 5% of their original weight.

Bariatric surgery is considered as the first line of option for patients with the BMI over 50 kg/m² and this intervention can be recommended to those who have BMI of more than 40 kg/m², who have tried all non-surgical methods but failed to achieve any weight loss, who are committed to a long-term behavioural change, who are fit for surgery and who will receive support from specialist obesity service. However the surgery is not generally recommended for children or young people [240].

It should be noted that in relation to this study, the researcher examined only non-prescription products and services. Therefore, these treatments are not be examined in detail.

6.5 Problems in weight gain products

6.5.1 Steroid products

Anabolic steroids were most likely to be used by men who participated in weight-lifting, football or gymnastics [152]. Adolescents who used steroids reported lower self-esteem, depression, greater participation in sports, lack of knowledge about health, increased risk of eating disorders, and using illicit substances, compared with those who did not use steroids [219]. Only the benefits of using steroids are stated on the packaging labels or in adverts. These are said to include improvements in muscularity, strength, appearance, and performance, along with a decrease in recovery time and a general promotion of the healing process. Consequently, people know less about the serious side effects of these substances [241].

Steroids have several detrimental consequences especially in the area of physical health. These include, for instance, halting bone growth, damage to the heart, liver and kidneys, feminisation effects (acne, breast enlargement and testicular atrophy) and reducing fertility [219]. Anabolic steroids also have an effect on mental health which can result in depression, mania and aggression [242, 243]. In the case of those who use steroids in the form of injection, this could also potentially lead to serious diseases such as HIV/AIDS and hepatitis due to sharing of needles [243]. It has been found that steroid-use is also associated with other unhealthy behaviours, for example: using other illicit drugs, suicide attempts and high-risk sexual behaviours [244]. Furthermore, anabolic steroid users tended to use other drugs such as the human growth hormone and clenbuterol in order to enhance weight-gain effects, and had experience of using addictive substances such as cocaine, cannabis and alcohol [242].

6.5.2 Other ergogenic products

Recent changes to the Misuse of Drugs Act 1971 and the Misuse of Drugs Regulations 2001 in the UK [245] have classified several ingredients, which might

be found in weight gain products, as class C drugs, which means they are illegal to possess or supply. These ingredients include Gamma-hydroxybutyrate (GHB) and steroid hormone precursors which are 4-Androstene-3,17-dione, 19-Nor-4-Androstene-3,17-dione, 5-Androstene-3,17-diol, and 19-Nor-5-Androstene-3,17-dione.

A report from the FDA in the U.S. [246] indicated that GHB has been identified as a “*recreational drug*” due to its harmful side effects such as vomiting, dizziness, tremors, seizures and finally even death. In 1990, the FDA [247] withdrew products containing GHB, however it has been found that some products still use its precursors such as gamma butyrolactone and 1,4-butanediol. These substances may lead to several health problems, including addiction, vomiting, loss of consciousness, incontinence, amnesia, respiratory suppression, slower heart rate, seizures, and death [152, 248].

Apart from anabolic steroids, other potentially harmful dietary supplements have been used increasingly among males. For example; androstenedione and dehydroepiandrosterone (DHEA) which are known as steroid hormone precursors may also stimulate the body to produce testosterone [152]. However, there is less evidence about the side effects of these steroidal supplements. It has been suggested that when large amounts are consumed, they may harm the body in a similar way to steroids [152].

Creatine is also becoming more popular among male athletes as it has been claimed to enhance athletic performance [152]. Even though the possible side effects of using this substance are not clear, its effects have been reported to include muscle cramp and strains, dehydration, gastrointestinal problems, and nausea. Furthermore, consuming large quantities may damage the kidneys, especially when taken with other protein supplements [152].

More recently, a number of studies found that β_2 agonists such as clenbuterol had been used among male athletes for improving strength and increasing muscle mass. It has been reported that the misuse of this drug can cause tremor and tachycardia which could lead to sudden death [249].

6.5.3 Ephedra products

Even though ephedrine is more usually found in weight loss products, it has also been used by bodybuilders. However, many studies showed that ephedrine alone had no significant effect on improving athletic performance. Moreover, it has been found that ephedrine can contribute to many drawbacks such as psychiatric symptoms, autonomic hyperactivity symptoms, upper gastrointestinal symptoms and heart palpitations [232].

6.6 Summary

Women are more likely to engage in weight loss behaviours than men in all age groups. When comparing women across all age groups, a high prevalence of weight change behaviour is found among women aged between 18 to 30 years. Their main reason for weight loss is to improve physical appearance, whereas men's reasons are associated with health. In terms of weight change strategies, both men and women across all age groups were more likely to choose healthy weight change strategies, particularly dieting and exercise, than unhealthy strategies such as the use of weight control products and vomiting. It should be noted that apart from gender, BMI, ethnicity, SES and self-perception of body image also have an impact on the prevalence of engaging in weight change practices. Finally, a number of studies demonstrate that most weight control products can have harmful effects, especially when used in the long term.

7. WEIGHT CONTROL STRATEGY ADVERTISEMENTS

It is evident that exposure to the idealised body image in the media is strongly correlated with body dissatisfaction, resulting in a high prevalence of using weight control practices in order to achieve the ideal. One method for changing weight is to use weight control products, which claim to offer a quick-fix solution. This section will review the growing trend of weight change strategies being made available on the Internet, the regulation and guidelines for the advertising of weight control products and the problems identified with these adverts in the US and the UK.

7.1 Trend of weight change strategies on the Internet

Increasing use of the Internet as a source of health information is evident. A recent online survey found that “*diet, vitamin and nutritional supplements*” was the third most popular health topic searched on the Internet [250]. The Internet is seen as a trusted source of healthcare advice, with Internet users in four countries reporting that they considered the advice to be of a high quality [251]. A survey of 125 US college students illustrated that over 40% had searched the Internet for information about healthcare, with half of them seeking for diet or nutrition advice [252].

In relation to weight change strategies, the 2005 online survey of weight management resources on the Internet indicated that more than two-thirds of respondents searched for “*information on health and ideal weight*” and around 40% looked for information on fad diets such as the Atkins and South Beach diets [253]. A recent survey of more than two million US online consumers ascertained that more than 60% searched for information about weight loss diets and programmes on the Internet, whereas around 50% used offline resources. This study also found that more than 40% of users reported being satisfied with the weight loss websites and almost three-quarters reported that these websites had a great impact on increasing their compliance with weight loss programmes [254]. The Internet is also used as a source of medicines for US adults, with 20% reporting purchasing OTC or prescription medicines online [255].

7.2 Regulations and guidelines for weight control product advertisements

7.2.1 Background

The Internet is a major source of information about diets and weight control products due to its easy accessibility and its ability to obtain specific information [237]. Lack of quality control and “*context deficit*” are considered as key issues surrounding the purchase of health products from the ever increasing Internet market. Filtering (a system to control the quality of information) is thought to be an effective method to control the attributes of Internet content [256].

In 1996, the first filtering tool to assist consumers in judging the content of websites was developed [257]. This DISCERN tool aimed to assist consumers to evaluate the quality of health information about treatment choices [258]. However, this tool was not specifically aimed at weight control product advertisements per se. Therefore, the regulations and guidelines for these adverts were also reviewed.

7.2.2 Weight loss advertisements

First to be mentioned is the British Code of Advertising [259], which contains the following regulations for advertising slimming products:

1. Efficacy of slimming products should be claimed in reference to strictly clinical trials.
2. Treatments for obesity should not be advertised except for use under medical supervision.
3. Advertisements should not be directed at people aged less than 18 years.
4. Advertisements should not suggest that being underweight is desirable.
5. Advertisements should not contain the exact amount of weight loss or claim weight loss from specific body areas.
6. Rate of weight loss should be about 3lbs to 2lbs per week with regard to the guidelines of the Department of Health.

Secondly, the U.S. Federal Trade Commission [260] has suggested several ways to spot false claims for weight loss which include claims to:

1. Cause weight loss of two pounds or more per week without dieting or exercise.
2. Cause substantial weight loss no matter what or how much the consumer eats.
3. Cause permanent weight loss (even when the consumers stop using the product).
4. Block the absorption of fat or calories to enable consumers to lose substantial weight.
5. Safely enable consumers to lose more than three pounds per week for more than four weeks.
6. Cause substantial weight loss for all users.
7. Cause substantial weight loss by wearing a product on the body or rubbing it into the skin.

It should be noted that there are differences in terms of the levels of control for weight change adverts. In the UK these adverts are controlled by regulations but in the US, the guidelines are for public to use to detect false statements in adverts.

Additionally, guidelines from the Partnership for Healthy Weight Management [261] suggest that weight loss advertisements should include information about the risks of being overweight and obese, such as increased risk of heart disease, diabetes, some forms of cancer, gall bladder disease, osteoarthritis, stroke, and sleep apnoea. In the case of people who are taking medicines or have a specific condition, they should provide warnings to consult with a health professional before using these products. Moreover, they should indicate some physical changes that might occur during the weight loss period, for example dizziness, interruptions in the menstrual cycle and hair loss.

Consumers should also receive information for maintaining weight loss long term which suggests exercise at least three times a week and developing healthy eating behaviours: reduction in total calorie intake, limiting amounts of high-fat foods, and

increasing in vegetables, fruits and whole grains. Consumer should ensure they check the cost, staff credentials and requirements of weight loss programmes before signing up.

7.2.3 Weight gain advertisements

In devising adverts for bodybuilding or weight gain products, advertisers should include information about the healthy way to gain weight including [262]:

- Increasing caloric intake by 200-1000 kcal per day. By increasing meal size, number of meals and snacks between meal.
- Increasing the amount of complex carbohydrates: pulses, beans, whole grains, pasta, bread, and potatoes.
- Eating enough protein, particularly slower release proteins such as caseine (cottage cheese), whole proteins, milk, chicken, fish and meat. And combining this with faster release protein after exercise.
- Adding resistance training to the daily routine as part of an individualised weight training and exercise programme.

Even though guidelines for advertising bodybuilding products have not been published, it has been suggested that there are three principal criteria to evaluate ergogenic aid claims in advertisements [263].

1. Source of the information

Information should be divided into three sources: peer-viewed journals (most reliable source), magazines and newspapers and books, or companies selling products. Consumers need to be particularly careful when reading such information from companies selling products, since it might be biased towards the benefits of the product they are trying to sell. Furthermore, it is important that any studies used to promote products have been properly conducted with rigorous controls, adequate sample sizes, and suitable follow-up times.

2. The author

Articles should be written by an academic in the field or someone with a related degree (sports medicine, nutrition, or biochemistry). Consumers need to treat with

caution articles that are written by someone who refers to themselves as a nutritionist without any of the appropriate qualifications.

3. Critical Analysis

Consumers should be aware of and sceptical about effectiveness, safety and long-term effects claims in adverts if they:

- Sound too good to be true
- Describe a study done on animals or inactive participants
- Recommend dosages that seem large or unsafe
- Make conclusive statements
- Suggest fast improvements in physical performance
- State the product contains some secret formula or ingredient
- Report having been proven by popular athletes

In terms of the efficacy of the product, claims like “*boost testosterone levels*”, “*build muscle fast*”, and “*increase strength instantly*” require scientific evidence to prove such outcomes [264].

7.3 Problems of weight loss product advertisements

A survey of slimming products on the Internet showed that only a few websites from a total of 50 contained useful dietary advice for losing weight [265]. In that survey, eight different methods of losing weight were identified from the sample (Table 7). Overall, one-third of the websites offered for sale supplements with a wide variety of purposes, such as multivitamins for people on low-calorie diets and herbal mixtures for appetite suppression. Furthermore, some websites made misleading claims, for example that amino acid supplements may increase food metabolism or that products containing Chromium could help to burn fat. Lack of information about the mechanism of action and side effects of products was also highlighted by this study [265]. This is consistent with a study by Ashar et al. [266], which showed that most websites advertising ephedra-containing weight loss products contained inappropriate statements and failed to inform users about side effects and recommended dosage.

Table 7: Characteristics of slimming websites (n=50), found by Miles et al. [265]

Method of losing weight	Number of sites
Sound dietary advice	3
Diet replacements	11
Vitamin/mineral/herbal supplements	15
Exercise/aerobics programmes	3
Surgery	2
Books on dieting	5
Links to other sites	2
Holistic approaches	4

Herbal supplements are available from a variety of sources and advertised widely in the media. A US study of product claims in adverts found that false claims were frequently used in herbal weight loss products. Claims included “*increase energy*”, “*decrease water retention*”, “*curb sugar craving*”, “*suppress hunger*”, and “*build muscle*” [267].

In 1995, The British Advertising Standards Authority (ASA) [268] investigated problems associated with advertisements for slimming products. Six typical problematic claims were highlighted in the survey (Table 8). The survey found over 40% of the sampled advertisements breached the ASA code of conduct. Recently, the ASA [269] repeated their survey for advertisements featured in women’s magazines and regional newspapers. They found over 80% of the weight loss advertisements contained problematic claims such as “*helping to lose weight by reducing appetite and increasing metabolic rate*”.

Table 8: Problematic claims in slimming advertisements in the UK, adapted from the ASA: A survey of slimming advertisements [268]


Types of claims	Examples of advertisements	How this breaches the code of the Advertising Standards Authority
Miracle claims	<i>“overnight miracle slim” “no dieting, no exercise! Eat what you like and still lose weight”</i>	These adverts contain false and misleading statements.
Exaggerated claims	<i>“this system WILL work for you” or “Guaranteed inch loss”</i>	Due to differences in physical condition and willpower, the product cannot guarantee success for everybody.
Weight loss claims and time periods	<i>“Ms X lost 3 stone”</i>	These adverts did not state how long these products should be used before showing specific amounts of weight loss.
Obesity	<i>“I lost 4 stone in five months”</i>	Using obese patients to advertise the efficacy of products.
Weight control by exercise	<i>“lose up to X inches on your thighs, hips and stomach”</i>	Weight loss can not be achieved through exercise alone.
Garments	<i>“Boost your inch loss ... reduce those unwanted fatty areas”</i>	Wearing these products can not promote permanent weight loss or fat loss from specific body areas.

In September 2002, The US Federal Trade Commission (FTC) [270] published a similar report about weight-loss advertising in various types of media. Their results showed that using personal testimonials, claims of fast results and claims of guaranteed results were the most frequently used problematic claims. The nature of these claims varied with the products being advertised. Meal replacements, for example, were most likely to use testimonial claims, whereas transdermal products were most likely to claim to be clinically proven and wraps were most likely to claim rapid results.

Weight loss programme advertising showed similar problems in a US FTC study. They found misleading or deceptive claims related to consumer testimonials, costs, staff credentials, and comparisons with other programmes. They also reported that there was a “*failure to substantiate claims for weight loss or weight loss programmes*” [236].

From these studies, there are nine types of problematic claims made in weight loss advertisements, ranging from consumer testimonials and exaggerated claims about effects to claims of professional endorsement and safety (Table 9).

Table 9: Nine types of problematic claims in weight loss product advertisements

Type of claims	Example of claims
Consumer testimonials	<i>"7 weeks ago I weighed 268 lbs, now I am down to just 148 lbs! During this time I didn't change my eating habits at all: the pounds must have disappeared only due to the new slimming capsule."</i>
Before and after photos	
Rapid weight-loss claims	<i>"Knock off your unwanted weight and fat deposits at warp speeds! You can lose 18 pounds in one week!"</i>
Lose weight without diet or exercise	<i>"Lose up to 30 lbs ... No impossible exercise! No missed meals! No boring foods or small portions!"</i>
Lose weight permanently	<i>"You lose it. You gain it back. Use [the advertised product] with every diet program and keep it off"</i>
No matter how many times you failed before	<i>"You've been there. You want to lose weight, and you've been successful before. But after a while, you're right back where you started- and the pounds always seem to come back ... [The advertised product] can help you break the cycle."</i>
Scientifically proven/ Doctor endorsed	<i>"Clinical studies show people lost 300% more weight even without dieting"</i>
Money-back guarantees	<i>"Believe me, I am not a gambler. I would never provide such an opportunity if I wasn't totally convinced that this is the weight-loss breakthrough of the decade, and there's no need to worry about too many requests for refunds."</i>
Safe and all natural claims	<i>"...none of the harmful side effects often associated with prescription diet products."</i>

7.4 Problems of bodybuilding product advertisements

Advertisements for weight gain products are not exempt from such problematic claims. However, there is less published evidence in this area. One study investigated nutritional supplement advertisements in health and bodybuilding magazines and found that of 311 products advertised in twelve magazines, almost 30% of the products had no effect listed, 23% claimed the benefits of muscle growth and enhanced strength, and 9% contained steroid ingredients [140]. Additionally, claims about other health effects were made (Table 10). Moreover, the problematic side effects of some ingredients have caused concern, particularly as these products are often advertised without warning of harmful effects. One product claimed that it contained “*glandular material such as; adrenal, hypothalamus, and neonatal pituitary hypothalamus concentrate*” but did not specify what the exact ingredients were [140].

Table 10: Claims mentioned in 311 food supplement products, from Philen et al. [140]

Types of claims	% of products making claims
Muscle growth	19.0
Increased testosterone level	8.7
Nutritional supplement	6.8
Energy enhancer	5.5
Fat reduction	4.8
Increased strength	3.8
Growth hormone releaser	2.6
No effect listed	28.9
Other effects	19.9

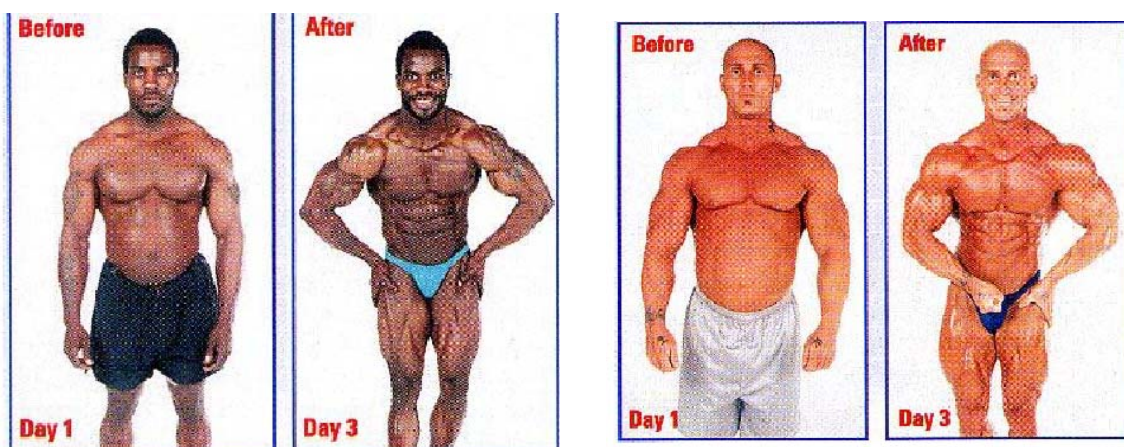
Another problem arising from weight control advertisements was the lack of information about contraindications including chronic health conditions such as hypertension and thyroid disease. Recommended dosages and the amount of each ingredient were also rarely mentioned in the advertisements. Phrases like “*the most potent alternative to anabolic steroids legally available*” or “*outperforms anything legal*” were commonly used claims about these types of products. Some advertisements even began with a statement regarding the applicable regulations in order to prevent false claims, as follows [140].

“Unfortunately our ads for [Product Name] caused such a stir that even the FDA thought they sounded too good to be true. As a result they’ve asked us to stop making all health claims for [Product Name]. They contend that such claims make [Product Name] a drug!!! What claims specifically? Things like – testosterone booster, growth hormone releaser, anabolic activator, incredible gains in lean muscle mass, energy enhancer, fat burner... and so on...”

The British Advertising Standards Authority (ASA) [264] found that many advertisements about sports and muscle supplements made unacceptable claims such as *“The Bodybuilding Breakthrough that can get you Ultra-ripped in just 72 hours!”*. Furthermore, it seems that some claims were made without any proof whatsoever, such as *“boost testosterone levels”*. Another concern is the use of before and after pictures and consumer testimonials as can be seen in Figure 5. This issue is of particular concern because it can cause consumer misunderstanding about the efficacy of products due to the ambiguous claims in some advertisements.

Moreover, a warning letter from the FDA [271] indicated that untruthful statements about the function of bodybuilding products can mislead consumers. Such statements include: *“build muscle fast”*, *“enhancing your body’s own muscle-building”*, *“increasing your lean muscle mass”*, *“feel totally powerful”*, *“strength supplementation”*, *“preserves lean muscle mass”*, *“supporting lean muscle mass growth”* and *“will also help increase strength instantly”*.

Figure 5: Examples of problematic claims in bodybuilding products: Before and after photos, taken from ASA Website [264]



7.5 Summary

A number of guidelines and regulations have been introduced to control and raise consumer awareness of the contents of advertisements for weight control products. However, evidence suggests that weight control product advertisements usually contain misleading statements about the efficacy of their products such as consumer testimonials, fast results and an increase in testosterone level. Dosage information and side-effect warnings were commonly missing from these adverts.

8. PHARMACISTS AND WEIGHT CONTROL STRATEGIES

Obesity is becoming a major problem in the UK due to its negative effect on both physical and mental health. Community pharmacists can play a key role in reducing obesity and promoting a healthy lifestyle. It has been proposed that apart from providing advice and information about losing weight, pharmacists can also help obese patients by operating weight management services. This section will cover three topics: the problems of obesity, pharmacists' role in obesity management and studies of pharmacy interventions related to weight management services.

8.1 The problem of obesity

It has been estimated that obesity related problems cost the British economy up to three and a half billion pounds each year [272]. The prevalence of overweight and obese people in the UK has trebled over the last two decades [273]. In 2002, it was reported that nearly 60% of women and 70% of men were categorised as being overweight or obese [274]. More alarmingly, the prevalence of obesity among children has dramatically increased from 9.6% in 1995 to 15.5% in 2002. It has been found that obese children have a high tendency to become obese adults [275] and develop serious health problems such as high cholesterol, high blood pressure, breathing difficulties and type 2 diabetes [276].

Obesity is increasingly recognised as a major concern in the UK because it can lead to medical, social and economic problems for the nation [277]. Medical problems include heart disease, type 2 diabetes, high blood pressure and osteoporosis [274, 276]. It has been reported that for obese people losing weight has beneficial effects on improving health, increasing physical activity levels and reducing the incidence of morbidity [278].

8.2 Pharmacist's role in obesity management

Pharmacists' role in improving public health has been recognised and formalised recently in the UK through the 2005 community Pharmacy contract. This contract, as part of essential services, requires pharmacists to provide services which include promoting healthy lifestyles, signposting and supporting self-care [279]. The Department of Health [274] has introduced a programme designed to improve public

health services delivered by pharmacy. This means that pharmacists are expected to provide a wide range of services for promoting better health to the public, including the key priority area of obesity.

A survey of 6,322 UK adults conducted in 2000 indicated that 70% of the respondents had visited a pharmacy within the last month [280]. A report published by RPSGB [281] showed that “*Health-related matters*” are one of the main reasons for visiting community pharmacies. In 2003, a MORI survey [274] showed that over one-quarter of the population chose pharmacists as a health information provider. Therefore, pharmacists are in a good position to provide interventions for tackling obesity problems in the community [282].

It has been suggested that dieting and increasing physical activity should be considered as the first intervention for weight change [235]. As a result, one of the key areas is to provide advice and information on managing lifestyle changes, in particular eating healthily and taking regular exercise [274, 283]. Pharmacists should support the national campaign for promoting healthy lifestyles such as five-a-day fruit and vegetable portions, and emphasise the importance of engaging in physical activities [276]. Furthermore, pharmacists can collaborate with health and social care providers, self-help and community groups in order to signpost patients with obesity problems so that they may receive appropriate interventions [274, 283].

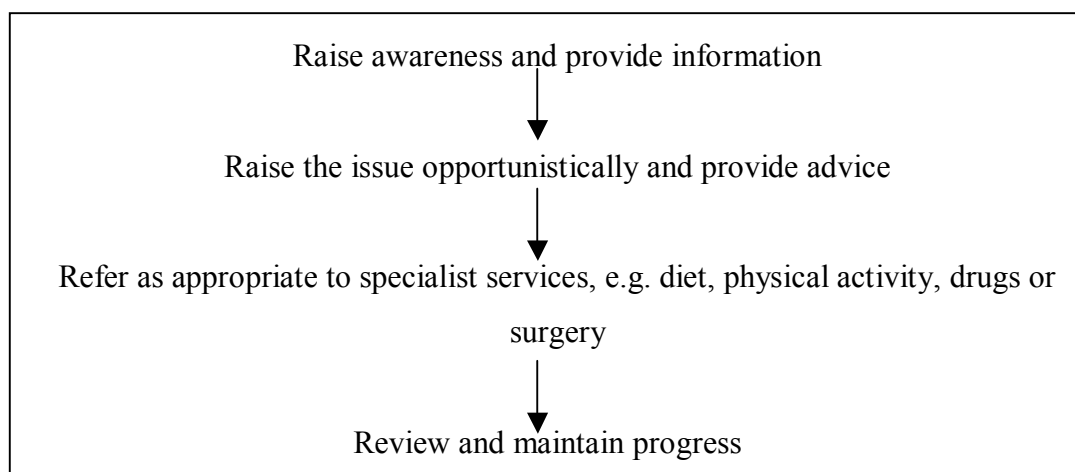
Although it has been recommended that the healthiest way to lose weight is to change dietary intake and increase exercise levels, pharmacists should also be aware of the availability of weight control products and services [284]. It has been suggested that obesity drugs such as phentermine, sibutramine or Xenical® can be used for patients who fail to lose weight through diet and exercise [235]. Currently, there are a variety of OTC weight control products which claim to help with weight loss or muscle gain. Moreover, there has been an increase in commercial diet programmes offering a quick breakthrough solution [273]. As a result, community pharmacists need to be aware of the consequences of using these products or methods, especially of their long term use [239] due to the possibility of drug interactions and potential side effects [285]. Pharmacists need to provide appropriate advice and information as well as monitoring patients who use OTC weight loss

products [285, 286]. Additionally, pharmacists will be expected to offer individual consultations on prescribed weight control products and selective advice on eating habits, physical activity and healthy lifestyles, particularly for patients who want to maintain their weight loss [287, 288].

Recent NICE guidelines for obesity management has suggested different approaches for healthcare professionals, including pharmacists to help in tackling obesity problem such as involving parents and carers to prevent weight gain among children and young people, interventions to increase exercising being adapted to fit everyday-life activity and a multicomponent approach (family involvement, specific advice and dietary modification) being introduced for improving eating habit [240].

In summary, there are several strategies whereby pharmacists can make a contribution to reduce the prevalence of obesity across the nation (see Figure 6).

Figure 6: A “care pathway” for tackling obesity, from choosing health through pharmacy, p.44 [274]



8.3 Studies of pharmacy interventions related to weight management

Although weight loss programmes such as Weight Watchers[®] are claimed to help people lose weight, research suggests that they did not provide the right approach to tackling the obesity problem since they tend to focus on looking and feeling good rather than emphasising the importance of avoiding disease and its consequences [287, 288]. A number of case studies have shown that operating weight loss

programmes in the pharmacy can help obese patients to lose weight effectively [276, 288]. Thus, pharmacists might be expected to be actively involved in different areas of obesity management, for example: screening for obesity problems, giving advice on dieting and lifestyle changes, recommending appropriate products and services, highlighting the health problems associated with obesity, and signposting to other appropriate services [282, 285].

Pharmacists' role in tackling obesity has also been highlighted in the US. A survey of this issue among US pharmacists showed that most pharmacists reported the highest frequency of consultation to be about anti-obesity drugs, followed by diet and exercise. This study also highlighted that pharmacists felt uncomfortable with giving advice or making recommendations about OTC weight loss products [285]. Moreover, two review studies by Malone [235, 288] identified a lack of training and time constraints as barriers to implementing weight management programmes in pharmacy. A recent UK study showed that community pharmacists also identified *"difficult relationship with other healthcare professionals and a lack of confidence"* as barriers to providing advice about health promotion including weight management [289]. However, it has been argued that only a few minutes could make a significant difference for some patients.

Patients who entered a weight management programme have reported significant improvements in quality of life, depression levels and binge eating behaviour. However, this US programme included collaboration between healthcare professionals and doctors, and this highlights the importance of healthcare professionals such as pharmacists being involved in weight loss programmes, since pharmacists are in a position to give reliable information about diet, exercise and drug-related topics [288]. Ahren [290] found that operating meal replacement or reduced-calorie diet plans in pharmacies can help patients to achieve significant weight loss.

In the UK, it has been proposed that community pharmacies are the ideal place to develop weight management services [282]. A UK study of 96 visitors to general practice showed that more than 70% of respondents recognised the role of community pharmacists in providing healthy living advice [291]. A recent UK study

suggests that community pharmacists are appropriate places for obesity management programmes, with patients reporting satisfaction with their weight loss services [292]. Moreover, the results from a pilot study of weight control programme in an Irish community pharmacy showed that patients participating in this programme achieved a significant amount of weight loss after three month [289].

8.4 Summary

Community pharmacists are perceived as having an important role in public health. Evidence demonstrates that pharmacists are in a good position to tackle obesity problems through providing advice about healthy lifestyle modification and weight control products. Even though a number of studies have shown that pharmacists can help patients to lose weight effectively, there are a number of barriers such as time constraints and training that need to be overcome in order to successfully implement these services widely in community pharmacies.

9. AIMS AND OBJECTIVES

This study had two main aims: to examine the impact of the media and weight control products on body image perception among university students and to investigate the role of pharmacists in terms of promoting healthy lifestyles in the community.

The study was comprised of three parts with separate objectives:

Part 1: Evaluation of weight control product advertisements on the Internet

The objectives were:

- To develop a tool for evaluating the quality and safety of advertisements for weight loss and weight gain products.
- To determine the quality and safety of advertisements for weight control products on the Internet.

Part 2: Body image views and influences among first year university students

This part of the study was split into two studies: survey and interviews.

1. Survey of first year university students

The objectives were:

- To measure body image perception and levels of body image concern.
- To determine the use of weight control strategies.
- To investigate influences on body image concern, including the media.

2. Interviews with first year university students

The objectives were

- To investigate the views on body image perception and the main influences on attaining the ideal body image and changing eating behaviours.
- To examine weight control behaviours, including the use of weight control products.

Part 3: Pharmacists and their role in weight control

The objectives were:

- To examine community pharmacists' views on their role in weight management.
- To examine pharmacist's attitudes towards weight control products and popular diets.

10. INTRODUCTION TO THE STUDY

The study is divided into three main parts: an evaluation of weight control product advertisements, a study of body image views and influences among first year university students, and an investigation into the role of pharmacists in weight control. Each part of the study is explained in detail in the individual chapters following this overview.

Part 1: Evaluation of weight control product advertisements

Specific instruments designed to evaluate the quality of information within weight loss and weight gain product advertisements were developed based on a tool called DISCERN [258], the UK regulations [259, 264] and the US guidelines for advertising weight control products [260]. Both instruments consisted of nine dimensions including safety, misleading information and consumer warnings. A total of 100 websites (50 weight gain and 50 weight loss) were randomly selected by using keywords in three popular search engines. Only one product from each website was chosen to evaluate the overall quality of the website. Validity and reliability tests were performed to determine the quality of the instruments.

Part 2: Body image views and influences among first year university students

This study consisted of two parts: a survey and interviews. The first part involved using a survey of students from various courses of study to examine body image issues across eight areas: body image, concerns about body image, weight change behaviours, the influence of the media, parental influence, peer pressure, the effect of advertisements, and weight control products. The questionnaire was developed with reference to the literature and the availability of the existing instruments. As part of this study, the reliability and validity of the questionnaire was tested. In the second part, semi-structured interviews were conducted with 20 undergraduate students from the School of Pharmacy and the Business School, University of Nottingham. The main purpose of the interviews was to investigate their views about body image perception and its influences.

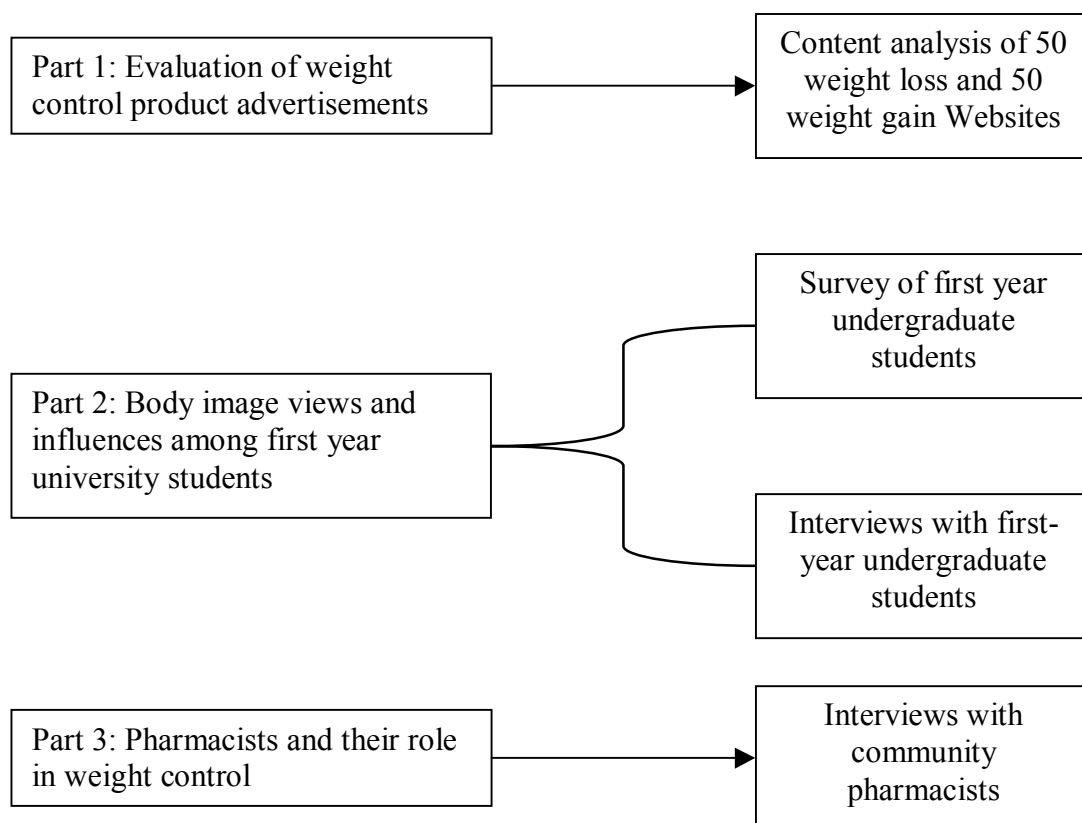
Part 3: Pharmacists and their role in weight control

Semi-structured interviews were conducted with eight community pharmacists in the Nottingham City area. The purpose of the interviews was to investigate the views and opinions of pharmacists about their role in weight control, such as setting up weight management services, providing advice about weight control products, and promoting healthy lifestyles.

Ethical Approval

Although this study is composed of three parts, only parts two and three required Ethical approval. The study of body image views and influences among young adults was approved by the Medical School Research Ethics Committee at the University of Nottingham in August 2004 for the interview study and in November 2004 for the survey. The study of pharmacists' views about implementing weight management services involved community pharmacists working within the Nottingham City Primary Care Trust. Ethical approval was given by the Nottingham Research Ethics Committee in December 2005 and Research Governance was approved by the Nottinghamshire Primary Care Research and Development Department in December 2005.

Figure 7: Summary of methods used in each part of the study



**11. PART 1: EVALUATION OF WEIGHT CONTROL PRODUCT
ADVERTISEMENTS ON THE INTERNET**

Evaluation tools for consumers to rate the quality of information on weight loss and weight gain products were developed and tested. The methodology section describes the development of tools for evaluating the quality of weight control products. The results provide insight into the problems surrounding weight control product websites from an analysis of representative products from 100 websites. A discussion of the study, its context and implications then follows.

METHODOLOGY

This section provides details of the methodology used in this study in terms of rationale for using the method, the development of evaluation tools, the reliability and validity of the method, and data analysis.

1. Rationale for developing rating scores for consumer use

Evaluation has been defined as *“a process of judging the merit or worth of something”* [293]. It has been suggested that there are a number of factors that need to be considered before choosing an evaluation method such as; the aims of evaluation, the availability of resources and types of evaluating materials [293]. There are a wide variety of methods used for evaluation including; interview, questionnaire and observation [293].

An evaluation tool is one of the methods used to address the credibility of material. This method was originally used to evaluate the quality of information in printed publications [294]. More recently, due to the rapid growth of the Internet, tools for assessing the quality of health information have been adapted for evaluating information on the Internet [295]. However, it has been argued that there is little evidence to demonstrate the quality of development, application and interpretation of these tools. Moreover, most of the tools have been evaluated by expert panels rather than consumers and only considered *“physical attributes”* [295]. Spector [296] observes that *“the summated rating scale is one of the most frequently used tools in the social sciences”*. This instrument was developed by Rensis Likert in 1932 to measure attitudes. However, these scales are now also widely used to investigate opinions and personalities. The main advantage of using these scales is that they are easy to administer and relatively simple to develop. A major limitation is that the

users need to spend time and effort thinking about their answers and making a decision [296].

Evaluation tools for weight control product advertisements were developed for this study to allow the researcher to better understand the problems associated with these adverts. Moreover, consumers who intend to buy such products will gain benefits from using the tools by learning and developing skills to justify the quality of product information. However, there are some drawbacks to using the tools including a lack of consistency in the scoring system and the limited data interpretation [297].

The following sections will explain in detail the development of the instruments for analysing information within weight control product websites.

2. Development of evaluation tools for weight control product advertisements

In the first stage of development, an overall rating for quality of information and questions about mode of action, product benefits and risks of the product, and areas of uncertainty were taken from questions 9 to 15 in the DISCERN tool [258] (Appendix 1). DISCERN is an instrument for assessing the quality of health information on choices of treatment. This tool consists of 15 questions addressing contents within a publication such as; risks and benefits of the treatment, biases in the material and the availability of additional information. The tool then produces a final rating score at the end of the tool. DISCERN aims to encourage the users to justify whether information in a publication is of a good or bad quality [295]. This tool also shows high inter-rater reliability and validity [298] and is widely used in several organisations and health-care providers [295]. Secondly, the literature on regulations and guidelines for advertising weight control products and the problems of weight control strategy advertisements were reviewed and used to develop questions about safety, scientific proof, misleading information (including seven types of weight loss claims and three types of weight gain claims, see Figure 8), useful information and instructions for the consumer. Thus, the tool consisted of nine areas of concern (Table 11). Supplementary questions were added to seven of nine sections, which aimed to clarify the main aim of that section and to enhance the

consistency and simplicity of the scoring system. As different concerns arise for weight loss and weight gain advertisements, two tools were developed in order to simplify the tools for the intended users (consumers) (Appendices 2 and 3).

Figure 8: Common claims used in weight control advertisements

Weight loss products	Substantial weight loss; Rapid weight loss; Can not fail and still can eat as much as you like; Permanent weight loss; Lose weight from a specific part; Block fat or carbohydrate; Lose weight by wearing or rubbing substances
Bodybuilding products	Increase strength or muscle growth; Rapid building muscle or gain weight; Boost testosterone levels

Table 11: Nine dimensions in evaluation tools

Dimensions	Definitions
Mode of action	Whether the website explains how the product works
Benefits	Whether the website explains the consequences of being overweight or underweight
Safety	Whether the product contains any harmful ingredients such as; Ephedra and Chromium Picolinate in weight loss products, and steroids and creatine in weight gain products
Risks	Whether the website includes information about consulting with a medical professional, side effects and customer warnings
Useful information	Whether the website suggests other strategies for helping to lose weight (exercise, healthy eating and reduce calories from fat) or gain weight (exercise, adequate protein intake and eating enough calories from carbohydrates, fat and vegetables)
Scientific proof	Whether the website shows results from rigorous trials, results from studies but no evidence, and consumer testimonials
Misleading information	Whether the website contains any extravagant claims (see Figure 8)
Areas of uncertainty	Whether the website provides consumers with other choices, contradictory evidence, and benefits to a specific group
Instructions for consumer	Whether the website includes information about dosage, cost, and duration of use

3. Content analysis of advertisements on the Internet

In order to test the evaluation tools, 50 weight loss and 50 weight gain websites were identified and one product for each website was selected as an example. The quality of information about each product was then assessed using the appropriate evaluation tool.

3.1 Identification of websites

According to studies of Internet use among UK and US adolescents, the top three commonly used search engines are YahooTM (<http://www.yahoo.com> and <http://www.yahoo.co.uk>), GoogleTM (<http://www.google.com> and <http://www.google.co.uk>) and Ask JeevesTM (<http://www.ask.com> and <http://www.ask.co.uk>) [299, 300]. Table 12 shows key terms used to search for weight loss and weight gain products based on the consensus within the research team. Each search term was entered individually in each search engine between February and April 2004 using Microsoft Internet Explorer version 6.0.

Observational studies on adults and adolescents showed that most participants were most likely to examine the websites listed in the first search page [300, 301]. As a result, only the first 10 Websites from the first result page for every keyword search were included. A total of 540 websites for weight loss products and 360 websites for weight gain products were gathered. It should be noted that a “*website*” in this context was equivalent to an “*advertisement*” in the printed media, although it is recognised that some websites might present themselves as “*advertorials*”, which include information which may be purely promotional or an effort to describe evidence for use of the product or strategy. Websites which contained the same product, duplicate, were non-functioning or only provided information about weight change with no product listed were excluded from the samples. The remainder were then grouped by the results from the six search engines. Eight to nine websites were randomly selected from each search engine in order to generate a sample of 50 websites to represent each type of product and the frequency of the current weight control product (Appendices 4 and 5).

Table 12: Key terms for searching weight control product websites

Weight loss strategies	Weight gain strategies
Dieting	Bodybuilding products
Diet pill	Build muscle
Diet products	Gain weight
Slimming	Gain weight products
Slimming aid	Increase muscle
Slimming products	Muscularity
Stay in shape	
Weight loss	
Weight loss products	

3.2 Website evaluation

In order to evaluate the content of websites only one product was used in the analysis - this product was randomly selected from the first page of each website and taken to represent all the products on that website. However, other information about weight change which could be accessed within the website was also included in the evaluation.

The sample of websites was analysed using the scoring tool designed for each type of product. The tools were developed to evaluate the overall quality of content on web sites and produced a score by totalling the individual section scores (Appendices 2 and 3). Section 1 and 2 comprised an overall rating scale ranging from 0 to 2. Section 3 to 9 consisted of a set of scoring questions about a topic, which asked the users to rate the question by answering yes, no or not applicable. However, the “*not applicable*” response will not be used for calculating a total score. At the end of each section, the user was asked to rate a total score ranging from 0-7 depending on the number of yes or no responses in each section. It should be noted that questions in the sections about harmful ingredients and misleading claims were asked in a negative form; therefore the total score in these sections was rated in reverse order. Total scores from each section were summed to give a final score ranging from 0-34 for weight loss and 0-24 for weight gain websites as illustrated in Figure 9.

Figure 9: A criterion for a final score rating

For weight loss product				
Low				High
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
≤ 9	10-16	17-22	23-28	≥ 29
For weight gain product				
Low				High
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
≤ 8	9-12	13-16	17-20	≥ 21

4. Data analysis

Data analysis was performed separately for the weight loss and weight gain evaluation tools. Frequency counts and percentages were determined for individual questions, the nine dimensions and the overall score. Additionally, quotes from the websites are used to illustrate the problems of the weight control advertisements found in the samples.

5. Validity and reliability of the scoring tools

5.1 Validity of the tools

Content validity was performed to assess validity of the tools. Content validity is defined as “*a measure of survey accuracy that involves formal review by individuals who are experts in the subject matter of a survey*” [302]. To assess the validity, the tools were piloted on a small number of websites and refined through iterative discussion within the research team coupled with reflection within the research team prior to the main study. Moreover, the researcher reviewed and compared the questions about misleading information to the criteria from the British advertising codes and the US guidelines for weight change strategies in order to ensure that all the plausible claims that might have been found in weight change advertisements were covered.

5.2 Reliability of the tools

Two types of reliability test were performed: test-retest and inter-coder reliability tests. The test-retest reliability test is a measure of survey stability by comparing data from the same respondents at two different time points. In this study, twelve websites were randomly selected and the evaluation performed again after a one month period. Inter-coder reliability is defined as a measure of survey reproducibility by comparing data from two different raters. In this study, ten websites were randomly chosen for a second coder to test using the tools. Spearman's rho (ρ) was used to analyse both types of reliability test by comparing the final scores between two sets of data (the original versus the retest scores and the results from both users). As the final scores were presented as ranked data, Spearman's rho was the most appropriate test to measure the association between paired data. A ρ value ranges from +1.00 (perfect positive correlation) to -1.00 (perfect negative correlation) and a value of 0 indicating no correlation. An ρ -value greater than 0.7 is usually considered to indicate a good correlation [303].

RESULTS

1. Analysis of weight control websites

There were two specific tools developed for (1) weight loss strategies and (2) weight gain strategies in order to evaluate the quality of information provided within advertisements.

1.1 Weight loss strategies

Fifty weight loss websites were selected to test the quality of information they provided. Each website was analysed by using a specific evaluation tool for weight loss and providing a total score for the quality of information provided within the website, ranging from 1 (poor) to 5 (high). The weight loss websites were categorised into seven types based on the product accessed and are listed in Table 13. More than half of the sampled websites advertised slimming or diet pills, comprised of both of herbal medicines and mineral supplements. Overall, the weight loss websites provided a poor to moderate quality of information (Figure 10).

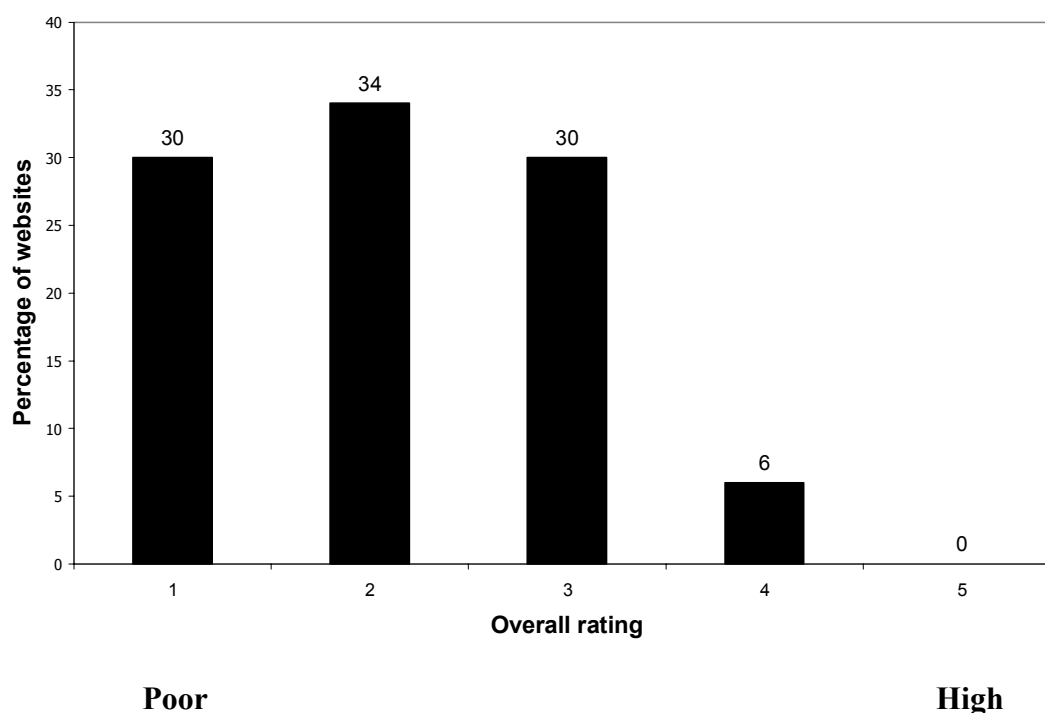
Table 13: Characteristics of weight loss products

Products or methods	Number of sites
Slimming Pills [#]	29
Weight Loss Programmes	8
Diet Replacements	3
Anti obesity Drugs*	2
Slimming Patch	2
Slimming Soap	2
E-book	1
Others products	3

[#] Containing either artificial or natural ingredients which claimed to aid weight loss such as Chitosan, Green tea extract and Chromium

* Including orlistat and sibutramine

Figure 10: Quality rating of weight loss websites (n=50)
 (“Maximum Possible Quality Score = 5”)



The results were then presented in separate dimensions as follows:

1.1.1 Dimensions 1 and 2: Mode of action and benefits

Analysis of the content of weight loss websites found that 68% partially described how the product works and only 12% described the benefits of not being overweight.

1.1.2 Dimensions 3 and 4: Safety and risks

In terms of active ingredients, four websites offered the products contained Ephedra or Ma Huang, which could increase the risk of high blood pressure and the chances of having a stroke. In addition, 10 products contained Chromium Picolinate, which could lead to cancer. Around half of the websites contained consumer warnings such as “do not use if pregnant, nursing, or planning pregnancy”. Only eight sites informed consumers about possible side effects. The following is an example from a site where side effects were well described: “dry mouth, sleeplessness, irritability, stomach upset or constipation may occur the first few days as your body adjusts to the medication. If these effects persist or become bothersome, inform your doctor”.

Despite guidelines suggesting two pounds per week as a sensible level of weight loss, only three weight loss adverts mentioned this. Some websites claimed that their products can help users to lose weight faster than the recommended guideline as can be seen in this advert: “...*To melt off 5-10 Pounds In The Next 7-10 Days!*”. In the case of very-low-calorie diets, none of the websites stated that their product should not be used for more than four weeks.

1.1.3 Dimension 5: Useful information

Exercise and healthy eating were the methods most commonly suggested for use in conjunction with weight loss products. However, some adverts claimed that their products can help to keep the weight off with no regard to healthy diet or exercise as can be seen in this example: “*what’s more, those who continued taking them kept the weight off more than 12 months with no bound-back rebound weight gain and no effort*”.

1.1.4 Dimension 6: Scientific proof

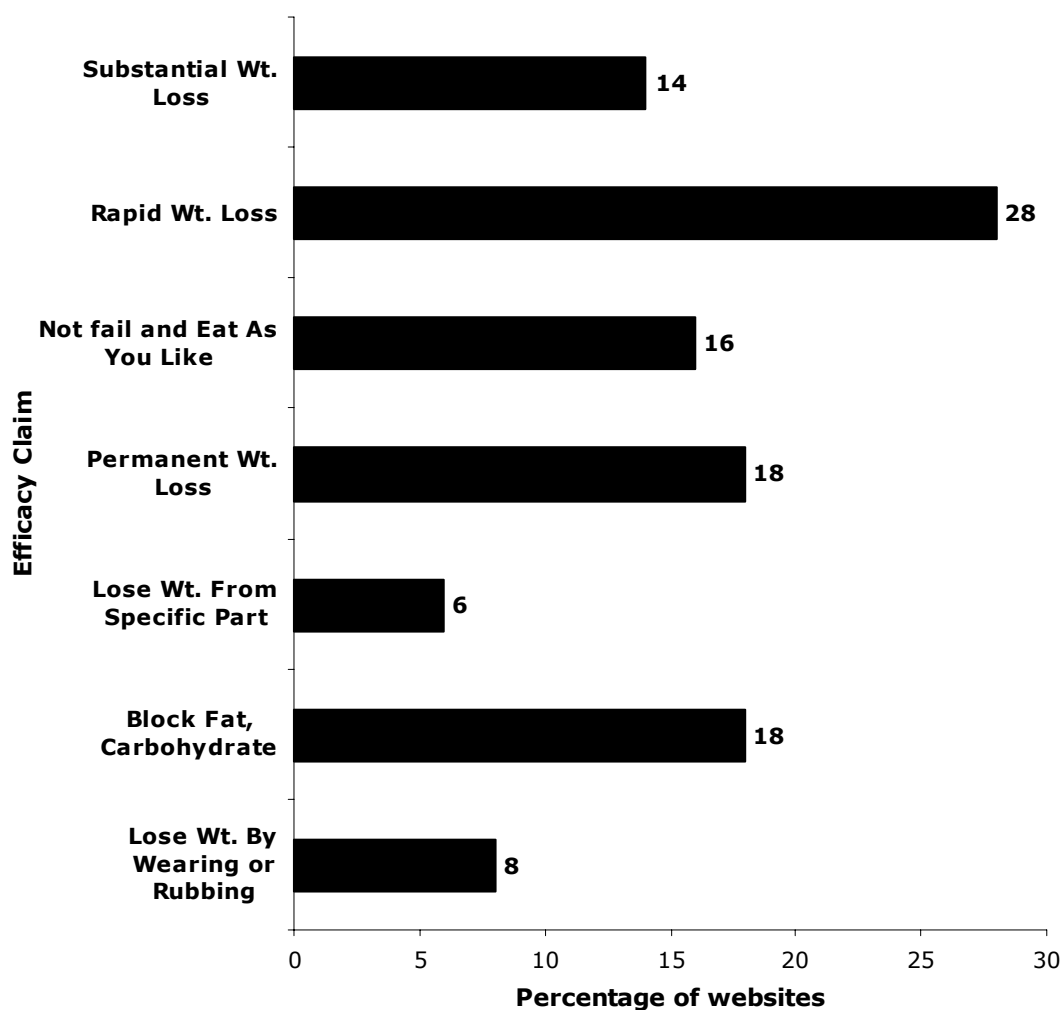
Regarding scientific proof of product efficacy, only seven sites provided the results from rigorous trials, which included references to a number of publications in support of their product. Results from studies but without references were found in 21 sites. One such website claimed that: “*Results never before seen in the diet supplement industry. In several recent double-blind studies (the only proof accepted by the established scientific community) several [of the product’s] key ingredients were put to the test. People who took each and every one of the key ingredients in [the product] lost significant weight. Those who didn’t lost absolutely nothing. The primary difference between losing weight and staying fat were the new cutting-edge ingredients in [the product]*”.

The majority of the sample (22 sites) used customer testimonials for advertising their products. However, some adverts offered a money-back guarantee to assure consumers of a satisfactory result after using these products, for example: “*one-year, money back guarantee*”, “*30 days money back guarantee*”, and “*110% money-back guarantee*”.

1.1.5 Dimension 7: Misleading information

Including efficacy claims, seven categories of misleading claims were found in slimming advertisements (Figure 11). It should be noted that some products may claim to have more than one function. The most frequent problematic claim was “*rapid weight loss*” (n=14), followed by “*permanent weight loss*” (n=9) and “*block fat and carbohydrate*” (n=9). The findings also showed that the proposed mode of action of some diet pills sounded unrealistic, such as one product which made the following claim: “*...grabs fat before it enters the blood stream*”. For some products, such as slimming soaps or slimming patches, which claimed to work by wearing them or rubbing them on the body, it was not explained clearly how these products work in the body. For example; “*When our pores open during a warm bath, the slimming agents within [the product] will penetrate the skin and promote the breakdown of fat deposit*”.

Figure 11: Characteristics of claims on weight loss websites (n=50)



1.1.6 Dimensions 8 and 9: Areas of uncertainty and instructions for consumer

A lack of options presented about weight loss was also found in most of the samples demonstrated by a lower score in the question about areas of uncertainty. Lastly, more than half of the sampled websites included information about recommended dosage and the cost of the product. However, only one-third of the websites indicated the duration of use.

1.2 Weight gain or bodybuilding strategies

A total of fifty weight gain product websites were analysed by using the evaluation tool specifically designed for weight gain or bodybuilding products. Most weight gain strategy websites were for nutritional supplements, followed by protein supplements (see Table 14).

Table 14: Categories of bodybuilding products found in 50 sites

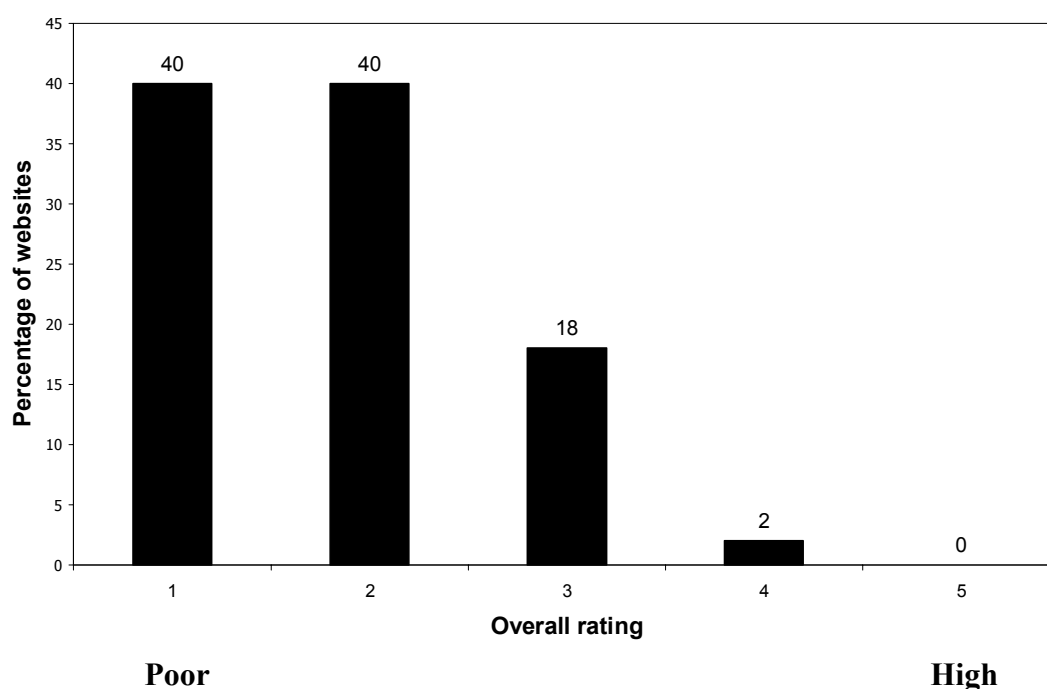
Products or Methods	Number of Sites
Nutritional Supplements *	19
Anabolic Products	11
Protein Supplements #	17
Weight Gain Programmes	3

* These products contain creatine, Chromium, Amino acids or Vitamins and Minerals.

Mostly contain Whey Proteins as a main ingredient.

In terms of the overall quality of information on weight gain websites, the majority of them were rated as poor or poor to moderate, as can be seen in Figure 12.

Figure 12: Quality rating of weight gain websites (n=50)
(“Maximum Possible Quality Score = 5”)



The results from a sample of weight gain websites were presented in nine dimensions (see Table 11).

1.2.1 Dimensions 1 and 2: Mode of action and benefits

From a total of 50 bodybuilding websites, 26 did not provide adequate information about the mode of action of the product. Almost all of the samples (49 out of 50 sites) did not describe the disadvantages of being underweight.

1.2.2 Dimensions 3 and 4: Safety and risks

In terms of harmful ingredients, 10 products contained steroids or steroid hormone precursors, which could have the potential to damage organs in the body such as the liver and heart. Moreover, 11 products contained creatine, which may lead to renal damage. Some products used statements to show that they did not contain steroids such as; *“better than some steroids”*, *“alternative to anabolic steroids”*, or *“proprietary anabolic herbal complex”*. Also, weight gain websites contained information stating that their ingredients were powerful and had no side effects. One product which contained a steroid as its main ingredient claimed: *“Higher potency*

than testosterone and No estrogenic side effects". However, none of the products contained Ephedra or Ma Huang.

As for the necessary statements which described the risk of the product, only six weight gain websites indicated that individuals who are vulnerable or have some health conditions should consult with medical professionals before using the product. More alarmingly, 46 websites did not mention any of the possible side effects which could occur during the use of the product. However, a small number of websites provided warning about some side effects as can be seen in this example:

"This product contains steroid hormones that may cause breast enlargement, testicular shrinkage, and infertility in males, and increase facial hair and body hair, deepening of the voice, clitoral enlargement in females"

1.2.3 Dimension 5: Useful information

It should be noted that weight gain product websites did not provide enough information about other strategies to help gain weight. Exercise was the most mentioned method (n=20), followed by advice about consuming a sufficient amount of foods containing carbohydrates and fat (n=12).

1.2.4 Dimension 6: Scientific proof

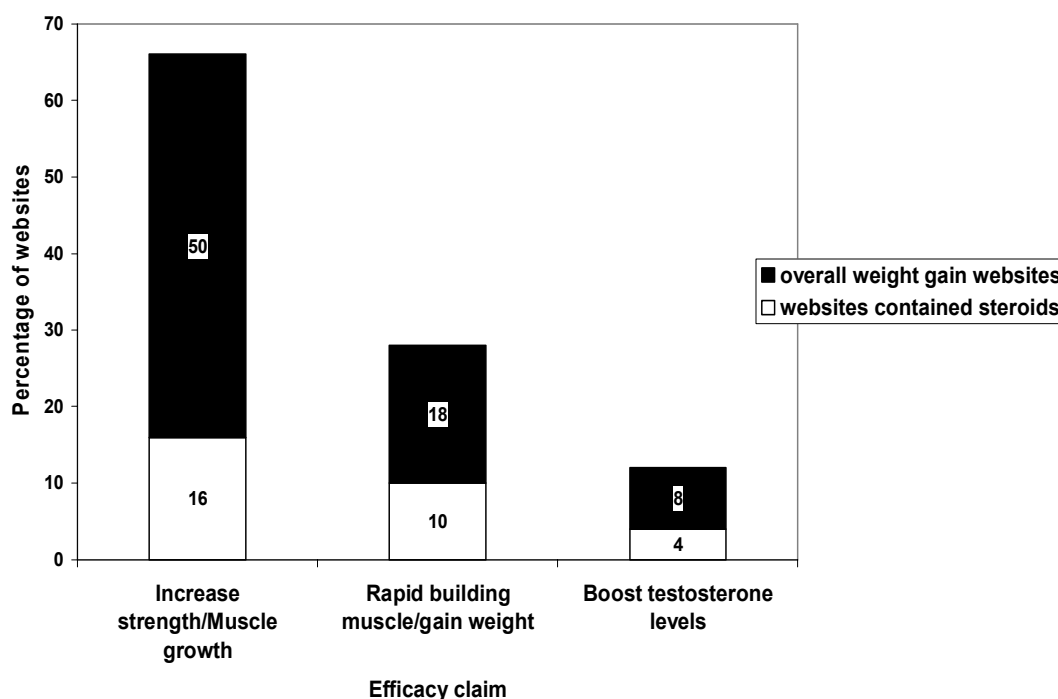
The results show that 20 bodybuilding websites included claims about studies showing their product to be effective but without providing any information about the studies. Only 7 sites cited studies which demonstrated that their products were efficacious with stating the source of references. Here is an example of a claim without an appropriate citation: *"raise your body's testosterone levels by over 337%!"*. Moreover, some advertisements claimed that the customer could expect to see the results in a very short space of time: *"...gained 7-10 lbs in one week"*.

As with the slimming advertisements, customer testimonials and before and after pictures were also used to attract male customers. In particular, some sites provided pictures showing a male bodybuilder lifting a heavy dumb-bell and the close-up picture of a muscular calf. Moreover, money-back guarantees were written into some advertisements.

1.2.5 Dimension 7: Misleading information

Overall, 30 weight gain websites had at least one type of claim. Figure 13 shows that half of the websites claimed that their products might work by “*increasing strength or muscle growth*”, where eight websites offered a product that contained steroids.

Figure 13: Characteristics of claims on weight gain websites (n=50)



1.2.6 Dimensions 8 and 9: Areas of uncertainty and instructions for consumer

Only three websites provided other options for consumers to help gain weight. Finally, the results demonstrated that 22 websites include the cost of the product, 11 sites indicated a recommended dosage, and 16 sites mentioned a suggested duration of use.

2. Reliability test

2.1 Test-retest reliability

When a sub-sample of 12 weight loss and 12 weight gain websites were re-tested after one month, half of the weight loss and one third of the weight gain websites had a different overall scale. However no score was different by more than 1 (on a scale of 1-5) (see Appendix 6). The overall scores at both times were compared between

the two data sets and the Spearman's rho (ρ) was calculated. The results showed that the correlation coefficient for weight loss strategies $\rho = 0.835$ and for weight gain strategies $\rho = 0.715$. Thus, both these tools can be considered reliable to an acceptable level [303].

2.2 Inter-coder reliability

The results obtained from a second coder were compared to the original coding and tested using Spearman's rho. Four out of 20 websites tested showed a difference in the overall score, a difference of 1 in each case (on a scale of 1-5) (see Appendix 6). Both tools showed good reliability as seen in the high correlation coefficient values, weight loss strategies $\rho = 0.953$ and weight gain strategies $\rho = 0.881$.

DISCUSSION

1. Summary of findings

The results indicate that websites for both weight loss and weight gain strategies provided a poor quality of information. Most of the sampled websites advertised slimming pills for weight loss and nutritional or protein supplements for body building. Around a fifth of the websites advertised products containing harmful ingredients such as steroids and ephedrine. The areas causing the most concern were the use of misleading claims, the omission of possible side effects and the inappropriate use of scientific reports. Finally, both tools were found to be valid and reliable.

2. Strengths and limitations

These instruments have the advantage of being specifically designed for consumers who want to search for weight loss or weight gain strategies. Each section in these tools includes supplementary questions intentionally designed to help consumers decide whether or not the website has provided enough information. The search strategy provided a wide range of products and programmes to test the instruments and thus it can be seen as appropriate for evaluating weight loss and weight gain products, particularly on the Internet. The tools exhibited acceptable reliability and validity at this stage of development, which can reflect the robustness of the tools.

This study has several limitations. Overall, there was no major difficulty using these evaluation tools to analyse the content of advertisements. However, only one product was selected as being representative of each website and it may be that the product selected was not typical of the website. The nature of websites means that they can be unavailable, or change frequently, all of which may have contributed to inconsistency in rating. Thus some differences in the test-retest reliability will be due to actual changes in the products. These product changes may be a result of distributors becoming aware that they are selling products containing prohibited substances.

Furthermore, only one type of validity tests was selected to measure the accuracy of the tools and two types of reliability tests were chosen to measure the stability and

reproducibility of these tools. Thus using different validity and reliability tests may produce different results, which could reflect other problematic areas while using the tools. Last but not least, the tools were not tested with consumers; therefore the results of the current study only represent the researcher's opinions towards weight control products and further testing should be conducted with consumers.

3. Comparison with other related studies

This study aimed to develop evaluation tools for weight loss and weight gain products. Burch [297] has argued that lack of consistency in the scoring system may decrease the reliability and validity of the scoring system; however the current tools did not show this problem. When sampling weight control product websites and testing each tool, the findings from this study suggest similar problems to those raised in a study by Miles et al. [265]. In their study of 50 slimming websites, safety concerns about meal replacement products and the dubious nature of their proposed mode of action had been found in their samples, issues which were also highlighted in the current study. This survey found that misleading claims and customer testimonials were used frequently in weight loss programme advertisements as has been previously found in a study by the US Federal Trade Commission (FTC) [236] for reviewing weight loss programmes in the US market.

In terms of misleading information on weight control products, the current study showed similar results to the FTC report on weight-loss advertising [270]. For example, 'fast results' was the most prevalent claim about dietary supplements and lack of clinically proven information was found on transdermal products. Claims like *"lose weight permanently"* and *"no matter how many times you have failed before"* were also found in the current study as has been also reported in the FTC study [270]. On the other hand, compared with the findings from the FTC report [270], the use of customer testimonials and before and after photos were less used in the current study.

Mason [284] cited the extravagant claims that can mislead the users about the safety and efficacy of weight loss products. In the current study, such claims as: permanent weight loss, no diet or exercise required, and the lack of reliable evidence were found to cause this problem. In terms of Very-Low-Calorie-Diets (VLCD), advice about

pursuing a healthy lifestyle such as eating sensibly and exercising should be included in conjunction with the product. However, such statements were rarely found in the current study, which was similar in this respect to the British ASA survey [268] on slimming advertisements in magazines and newspapers. This study was also congruent with the previous study in finding a lack of information about areas of uncertainty. For example, weight loss products should not guarantee that they can work for anyone and should provide any contradictory evidence against their own products [268].

Findings from the current study are consistent with a study of bodybuilding advertisements by Philen et al. [140] in that nutritional supplements were the most frequently found in product on weight gain websites and claims such as ‘muscle growth’ and ‘enhance strength’ were made by many weight gain product advertisements. Unlike the previous study, which found that no consumer warnings and information on potential side effects were given for the steroid products advertised, the current study found that a small number of advertisements mentioned possible side effects (n=4) and provided some appropriate warnings for consumers (n=6). Next, 24.2% of 914 instances in their study provided dosage information, and mostly these were products containing amino acids, whilst in the present study 22% of our sample included information as to recommended dosage. Lastly, in that survey steroids were found in only 9% of the products advertised, whereas in our findings 20% of sites offered steroid-type ingredients.

Finally, the findings confirmed reports published by the FDA [271] and ASA [264] showing that unsubstantiated claims about product efficacy, customer testimonials and before and after pictures were frequently used in bodybuilding product advertisements.

4. Implications of the study

Although there are legitimate guidelines regarding the advertising of weight loss and weight gain strategies, there are still a number of complaints about the problematic claims made for these products and programmes [304]. Regulation of these advertisements is very difficult in practice: sites change regularly and the global

nature of the Internet makes any kind of meaningful sanction almost impossible [305]. The DISCERN tool was developed in order to help the public evaluate the quality of health information, and the results from the current study build upon this. By raising public awareness of these issues, and with the availability of specific tools that can help them, consumers should be better able to evaluate the quality and safety of online information about weight control strategies. Although consumers may find the instruments time-consuming at first, as they become more familiar with the instruments and get used to evaluating information within advertisements, they should find it is a fast method with which to evaluate weight change advertisements. Eventually, they will learn to carry out such critical evaluations without referring to any such instruments and become ‘expert consumers’.

5. Further studies

The main aim of this study was to develop evaluation tools for weight loss and bodybuilding products. Therefore, the next logical step would be to identify the targeted users of these websites and test the tools with the intended users. Although this study used the tools to evaluate websites taken from the three most popular search engines, further studies should be undertaken with a larger number of advertisements from a variety of media sources. Moreover, further research should examine the quality of weight control products available in the pharmacies and health-food stores. This will enable healthcare professionals to be aware of the products they sell in order to provide appropriate and suitable advice and consultation for customers.

SUMMARY

Evaluation tools for weight change advertisements were developed and tested on 50 weight loss and 50 weight gain websites. The tools were proved to be valid and reliable and the results from sampled websites highlighted problem areas including misleading claims, lack of consumer warnings and the absence of appropriate information. The next section presents a study about body image and weight control products, research undertaken with university students using both survey and interview techniques.

**12. PART 2: A STUDY OF BODY IMAGE VIEWS AND
INFLUENCES AMONG FIRST YEAR UNIVERSITY STUDENTS**

METHODOLOGY

The study consisted of two parts: survey and interviews. This section will examine each method in terms of the rationale, the development of questions, the conduct of the study, the reliability and validity of the method, and data analyses.

Survey of first year university students

1. Rationale for questionnaire use

It has been suggested that “*quantitative methods are very effective at establishing the veracity of empirical social facts but less effective at establishing the motivations or reasoning employed by social factors*” [306]. In order to explore body image issues and their influences on a large number of university students, a questionnaire was selected as a method of surveying. This method is considered to be an effective way to collect data from large sample sizes of diverse participants and to be less time-consuming, compared with interviews [307]. Some researchers argue that the use of a questionnaire can reduce the potential bias arising from the communication between the researcher and participants [308]. However, there are several limitations that need to be considered, including the issue of complexity in data analysis and an inability to clarify ambiguous questions and answers [309].

2. Developing the survey

A combination of original and adapted tools was used to examine each dimension of the questionnaire. The purpose of the questionnaire was to investigate young adults’ body image perceptions and their use of weight control products. The questionnaire is presented in Appendix 7. Firstly, participants were asked to provide some brief demographic information, which included gender, age and course of study, followed by a self-completion questionnaire consisting of eight parts, as follows:

- Part 1: Body image
- Part 2: Concerns about body image
- Part 3: Weight change behaviours
- Part 4: The influence of the media
- Part 5: Parental influences
- Part 6: Peer pressure
- Part 7: The effect of advertisements
- Part 8: Weight control products

Part 1: Body image

This part aimed to address respondents' body image views in three dimensions: body image perception, body shape dissatisfaction and body part dissatisfaction. The first question asked participants to rate their feelings towards their own body on a five-point scale, ranging from 1 (extremely satisfied) to 5 (extremely dissatisfied) (see Appendix 7 part 1, question 1).

Next, the Figure Rating Scale (FRS) was used to examine body shape dissatisfaction in terms of the perceived current and ideal body image. This tool was originally developed by Stunkard and colleagues [310] in 1983. It exhibits high correlation between the current body weight and the self-assessed body weight. The tool consists of nine silhouettes of men and women, ranging from very thin (1) to very obese (9) see Figure 14. Respondents were asked to choose one figure that best represented their current and their ideal body shape. It has been suggested that the nine figures can be categorised into five groups: underweight, normal, slightly overweight, moderately overweight and very overweight as can be seen in Figure 14 [66]. Body Image Discrepancy scores were measured by calculating the differences between the current and ideal body image. The FRS has been tested in male and female college students and indicates good test-retest reliability. Moreover, it showed a moderate relationship with other measurements such as; *"eating disturbances and overall self-esteem"* [311].

Lastly, respondents were asked to select part(s) of their body that they feel satisfied and dissatisfied with. Nine areas of body were chosen in order to measure body part satisfaction and dissatisfaction related to fifteen aspects of appearance from the body

image survey [312], which were hips, hands, legs, buttocks, hair, abdomen, face, chest/breast and arms.

Figure 14: Nine-figure rating scale and its classification from Leonhard and Barry [60]



Part 2: Concerns about body image

Body image disturbance has been used as an indicator for eating disorders, principally anorexia nervosa. It is comprised of two aspects: concern about body shape and body size overestimation. Although there are a number of tools available for assessing body dissatisfaction, none of these directly measure levels of body image concern. Cooper et al. [313] developed a specific tool to examine body image concern among patients with eating disorders known as the Body Shape Questionnaire (BSQ). This tool was used to examine two aspects regarding levels of body image concern: depreciation of their own body and the accuracy of their perceived body shape. The original version consists of 34 items, with a six-point Likert scale ranging from (1) never to (6) always. The total scores were summed and divided into four levels of body image concern: unconcerned (34-80), slightly

concerned (81-110), moderately concerned (111-140) and extremely concerned (141-204). Validity testing showed that the BSQ was highly correlated with the Body Dissatisfaction subscale of the Eating Disorder and the total scores of the Eating Attitudes Test (EAT). Moreover, the BSQ was validated to distinguish the levels of body image concern between normal adults and patients with eating disorders [313].

It should be noted that it can take a considerable amount of time to complete the original BSQ. As a result, Evans and Dolan [314] developed six shortened versions of the BSQ, two containing 16 items and four containing 8 items. The alternative version of the BSQ showed high internal consistency and strong correlation with the EAT-26, BMI, the Hospital Anxiety and Depression Scale. Moreover, the BSQ scores from the shortened versions were found to be useful for differentiating women with eating or food problems from the control group.

Recently, Mazzeo [315] developed a revised 10 item BSQ by adding two new items to the eight items from the original 34 item questionnaire. This new tool aimed to examine the levels of concern among those who were preoccupied with body image but showed no clinical signs of eating disorders. This tool demonstrated high internal consistency. Furthermore, the 10-item version of the BSQ showed high criterion validity with several measurement scales for disordered eating such as EAT-26 and the Bulimia Test-Revised.

Regarding the questions in the original BSQ, some questions are potentially difficult to understand or repetitive. Additionally it is a lengthy questionnaire to incorporate as part of yet another questionnaire. Therefore, for this study eight items were selected to investigate the levels of body image concern among university students (see Appendix 7 part 2). It should be noted that this adapted version is different from the shortened form developed by Evan and Dolan [314] and Mazzeo [315]. Possible scores range from 8-40, with a higher score indicating a higher level of body image concern. A total score can be grouped into four categories: unconcerned (≤ 19), slightly concerned (20-26), moderately concerned (27-33), and extremely concerned (>33). Finally, in order to compare the level of concern across respondents in different groups, respondents were then divided into two groups: for those who

reported being unconcerned or slightly concerned were grouped as ‘low body image concern’ and the remainder were grouped as ‘high body image concern’.

Part 3: Weight change behaviours

In this section (see Appendix 7 part 3), respondents were asked about their experience of trying to change weight. The questionnaire consisted of five aspects: experience of changing weight, time of the last attempt to change weight, weight change strategies, weight change achievement and maintenance. All the questions were modified from the questionnaire used in a study by Bendixen et al. [225]. Respondents were asked whether they had experience of trying to change their weight or not. Only respondents who had tried to change weight were eligible to complete the follow up questions.

The four follow-up questions were about the time(s) of their last attempt to change weight, the method(s) they had used during the attempt to change weight, the outcome, and the result of weight change maintenance.

Part 4: The influence of the media

The Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ) was originally developed by Heinberg et al. [316] in 1995 for addressing the recognition and the acceptance of ideal media images among women. It contains 14 items and measures two aspects: awareness (the recognition of the societal standard of thinness) using six items and internalization (the acceptance of this standard) using eight items. The questionnaire has been shown to have high reliability for both factors. Moreover, one study indicated that both awareness and internalization scores in SATAQ were significantly correlated with BSQ among dieting disordered patients. However, only the internalization scale of the SATAQ was associated with body dissatisfaction (BSQ) for the control group [137].

Items 8 and 9 in the SATAQ are closely related and so only item 8 was selected to examine the importance of being attractive in society. This adapted version of the SATAQ was modified from the SATAQ version for girls and boys, which has been demonstrated a high internal consistency in all subscales and the total score of SATAQ [317]. The factor analysis of the SATAQ for girls showed similar results to

the original SATAQ scores. However, there was one added factor in the SATAQ for boys: muscularity (the importance of being muscular). Thus two versions were used and consisted of five-point Likert scales answered with strongly agree to strongly disagree (see Appendix 7 part 4). In the version for women, the internalization scale consists of items 1-5, 7, 12 and 13 (eight items) and the remaining five items form an awareness scale. On the other hand, the adapted SATAQ for men was comprised of four items of awareness scale (items 6, 8, 9 and 11), seven items of internalization scale (items 1, 3, 4, 5, 7, 12, and 13) and two items of muscularity scale (items 2 and 10). Based on the respondents' answer, a total score was summed and given a possible score ranging from 13 to 65, a higher score indicating a greater influence from the media.

Part 5: Parental influences

The questions in this part considered three aspects of the perceived influence from parents: comments, importance of being thin and encouragement to change weight. Each dimension contained questions which considered these issues in relation to both father and mother, rating on a 5-point scale: from 1(never) to 5(always) (see Appendix 7 part 5). In terms of comments from parents and the importance of being thin, all the questions were taken from the *"Weight teasing: Adult Teasing Scale"* and *"Parents: Concern with Thinness Scale"* in the McKnight Risk Factor Survey-III [318]. A study of adolescent girls showed that this instrument exhibited good test-retest reliability, internal consistency and convergent validity with several tools such as *"Rosenberg Self-esteem Scale"* and *"Weight Concern Scale"* [318]. Finally, two questions about encouragement were adapted from *"Parental and Peer Influence Scales"* in the Perceived Sociocultural Influences on Body Image and Body Change Questionnaire. This subscale showed moderate levels of internal consistency when tested among adolescent boys and girls [319].

Part 6: Peer pressure

Four aspects were selected to examine the influences of friends: friends as a source of influence, friends' concerns about body image, friends' talks and pressure from peers to be thin, rating on a five point scale depending on the types of questions (see Appendix 7 part 6). Most of the questions in this section were taken from the *"friend*

relations and perceived attitudes” questionnaire in a study by Paxton et al. [125], which has shown good reliability and validity among adolescent girls.

Part 7: The effect of advertisements

The aim of this part was to examine the effect of advertisements for the purchase of weight control products. Participants were asked to indicate the prevalence and sources of adverts they had seen. They were asked about their attitudes towards the influence of weight control advertisements and then, indicate the type(s) of adverts they had seen. Finally, they were asked to choose their main reason(s) for buying weight control products (see Appendix 7 part 7).

Part 8: Weight control products

All the questions in this section were taken from the evaluation tools for weight control product advertisement, as mentioned in chapter 11 (See Appendices 2, 3). A filter question asked if respondents had used weight control products. Questions then consisted of seven dimensions such as; the mechanism of action and the harmful ingredients. Some examples of the questions are “*Did the product mention how it worked?*” and “*Did the product contain either Ephedra or Steroids?*” (see Appendix 7 part 8).

3. Reliability and validity of the questionnaire

For face and content validity (a procedure involving a critical review by experts), the questionnaire was pre-tested for question accuracy and clarity by colleagues at the Division of Social Research in Medicines and Health. Moreover, some questions used in the questionnaire were taken from previously validated instruments, whose reliability and validity have already been established.

Internal consistency has been defined as “*measure of survey accuracy that reflects how well different items in a scale vary together when applied to a group of respondents*” [303]. Internal consistency was measured for the four new instruments which are body image concern (Appendix 7 part 2), the media’s effect (part 4), parental influence (part 5) and peer pressure (part 6). The level of reliability was tested using Cronbach’s alpha. It has been defined as a measurement of detecting the

correlation between the test items and others, where a possible value ranging from 0 to 1 (the higher the score, the more reliable the tool is). A Cronbach's alpha of 0.8 was used to acceptable level of reliability and for measuring the consistency across multiple items, a corrected total item correlation of 0.3 was considered as acceptable level [306].

4. Distribution process

Questionnaires together with reply envelopes were handed out to first-year students at the end of a lecture following a brief talk about the study. Twenty-three schools from a possible 28 across six faculties were purposively selected to represent the broad range of students in the university due to a limited access to first-year students' timetables in some schools. Moreover, the distribution method meant that reminders were not sent to non-respondents.

5. Statistical analysis

Data analysis consisted of determining frequencies, means with standard deviation (SD) and range, where appropriate. Where groups of questions formed part of a previously validated questionnaire, these were scored as described earlier in section 2, part 1, 2, 4, 5 and 6 (FRS, concerns about body image, adapted SATAQ, parental influences and peer pressure). In order to make comparisons between groups, body image concern was divided into two levels based on overall score – low concern = 8-26 and high concern = 27-40.

Cross-tabulations of survey questions and demographic variables (age groups, genders and course of study) were performed to determine if there were any associations between the variables. Additionally cross-tabulations of level of body image concern with other survey questions were also performed to determine if there were differences by level of concern. Mean scores and standard deviations for FRS, concerns about body image, adapted SATAQ, parental influences and peer pressure were compared across different age groups, genders and level of body image concern.

In order to determine if the differences between groups were statistically significant different, tests were used depending on the data.

Differences between groups were tested using Chi-squared for the following categorical data.

- a. Body image (part 1, question 1) by gender and age group
- b. Body part satisfaction and dissatisfaction (part 1, questions 5 and 6) by age group and gender
- c. Concerns about body image (part 2) by level of body image concern
- d. Weight change strategies (part 3, question 3) by gender, age group and level of body image concern
- e. Source of weight control advertisements (part 7, question 2) by gender
- f. Types of advertisements (part 7, question 4) by gender, level of concern and age group
- g. Reasons for purchasing weight control products (part 7, question 5) by gender, age group and level of concern

Differences in mean scores across two groups (for age group, gender and level of concern) were tested using the Mann-Whitney test as follows:

- a. Concerns about body image (part 2)
- b. The media's influence (part 4)
- c. Parental influences (part 5)
- d. Peer pressure (part 6)

In order to investigate the effect of faculty of study differences in mean scores for the media's influence (part 4) and peer pressure (part 6), Kruskal-Wallis was computed. Kruskal-Wallis is suitable to test differences across multiple groups of ranked data.

For all these analyses a result was considered to be statistically significant where the p-value was less than 0.05. P-value represents a percentage of chance to observe the differences between two data sets; even there is no difference between those two data. In the case of p-value of 0.05, it means that there is only a 5% chance of observing a difference between two groups, where there is no actual difference.

Finally, in order to examine the degree of association between sociocultural influences (the media, peers and parents) and body image concern, Spearman's rho correlation (r) was computed. The correlation coefficient indicates the strength and direction of a relationship between two variables. It has values ranging from +1.00 to -1.00, where +1.00 means "*a perfect positive relationship*" (the value for one variable increases, another variable will also increase), 0.00 means "*no relationship*" (where there is no relationship between two variables) and -1.00 means "*a perfect negative relationship*" (when the value for one variable increases, another variable will decrease) [306]. It has been suggested that the correlation coefficient can be categorised into five levels of strength as can be seen in Table 15. The researcher compared the results from each variable based on the r value and the significance level (p value).

Data were analysed using Statistics Package for the Social Sciences software (SPSS for Windows Version 11.0, 2001).

Table 15: Levels of strength of the correlation coefficient (r) value [320]

R value	Levels of correlation
0-0.19	Very weak
0.2-0.39	Weak
0.40-0.59	Moderate
0.6-0.79	Strong
0.8-1	Very strong

Introduction to qualitative research

This section considers the nature of qualitative research, the differences between qualitative and quantitative research, essential criteria for conducting qualitative study, and the reliability and validity of the qualitative research.

1. The nature of qualitative research

Smith [321] describe qualitative studies as “*the most appropriate for ‘how?’ and ‘why?’ question[s], which explore processes and patterns in people’s thoughts and behaviour*”. It has been suggested that qualitative research is suitable for exploring new topics, achieving a better understanding of certain contexts or of the nature of phenomena, investigating beliefs and attitudes towards the sensitive topics, or generating new theories [322].

2. Differences between qualitative and quantitative research

Regarding the nature of qualitative study, the contrast between qualitative and quantitative studies is evident in terms of the flexibility of the qualitative method, the openness that allows us to explore people’s viewpoints and provide a better understanding of people’s behaviour in a particular circumstance [321]. There are a number of differences between qualitative and quantitative research, such as the types of data collected and strength of research method. Quantitative study obtains data in numerical form and analysis usually makes use of statistical tools, whereas qualitative study obtains data in text form and requires an interpretation process for data analysis [323]. Qualitative research focuses more on validity, while quantitative research aims for reliability [324]. Although the sample size used in qualitative research is relatively small when compared with quantitative research, this does not confine the researcher to exploring the experiences or viewpoints of participants [321], which can lead to theoretical generalisation [323]. Moreover, in comparison to quantitative study, conducting qualitative research requires a sufficient amount of time and money to be spent on the research and the requirement of particular skills in order to reduce biases and prior assumptions on the part of the researcher (reflexivity) [325].

3. Essential criteria for conducting qualitative research

In this following section, the researcher reviews issues that need to be taken into account when conducting qualitative study in order to ensure the objectivity, reliability, validity, and trustworthiness of the study and its findings.

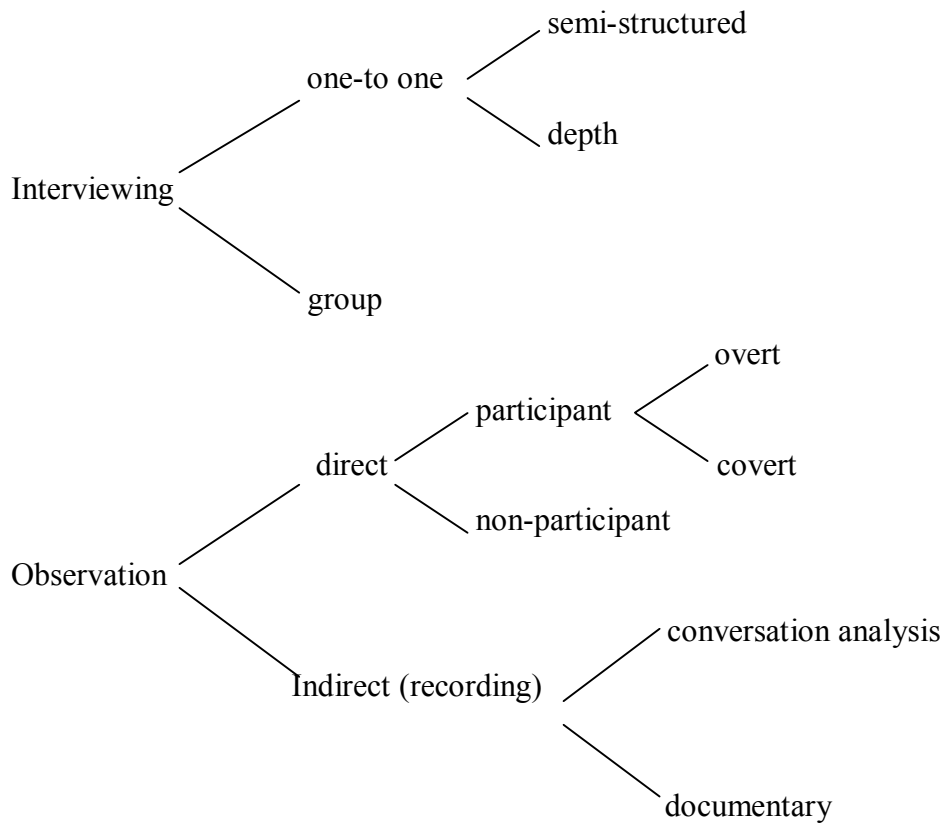
3.1 Sample selection

In order to achieve the objectives of qualitative study, the researcher needs to be concerned about the representativeness of the samples as well as the aims of the research. A commonly used method is a purposive sampling, in which the samples are selected from a group of people who possess similar characteristics and suit the purpose of the study [321].

3.2 Methods for data collection

There are two major types of methods of data collection: interviewing and observation (see Figure 15). In relation to interviewing, it can be categorised into two types, which are one to one and group interviews. Semi-structured interviews are the most commonly used method for conducting one to one interviews. This approach involves the use of an interview guideline, which contains a list of topics that the researcher may want to cover and explore in more detail [322] and the use of open-ended questions, which allows respondents to freely express their opinions towards each particular topic [321].

Figure 15: Methods of data collection, taken from Britten et al. [322]



3.3 Data analysis

In terms of analysing qualitative data, there are several approaches depending on types of data collected. Developed by Glaser and Strauss [321], grounded theory has been widely used for the analysis of qualitative data. This approach involves generating coding categories from comparison of the data until it reaches saturation in order to develop a theory to explain phenomenon in certain situation [323]. The key of this technique is to inductively develop the theory from a specific environment [321]. The results from semi-structured interviews are mainly presented by the topic headings with examples given of quotations from the interviews [321]. Moreover, it has been suggested that further data collection may be needed for testing theory with the theoretical samples [323].

3.4 The place of study

The location of the interview is another issue that the researcher needs to be concerned with. It has been suggested that the interview should be situated where the

respondents feel comfortable and in the most convenient location such as; their own home and health care settings for health care research [325]. It has also been suggested that the interviews should be conducted in a private and separate setting in order to ensure the respondents' confidentiality and comfort during the interviews [321].

4. Reliability and validity of the qualitative research

A number of methods have been suggested to enhance reliability and validity of this approach, as follows:

4.1 Triangulation

This method involves the use of more than one method for collecting data. The results from these methods will be used to compare for similarities in order to generate the overall findings. It has been argued that the use of a new method can compensate for the weaknesses of the originally used method, which is described as "*a genuine test of validity*" [326]. However, Mays and Pope [326] have argued that triangulation should be seen as a method to enhance the richness and reflection of data rather than as a test for validity.

4.2 Measures of trustworthiness

Graneheim and Lundman [327] have suggested four criteria to enhance the trustworthiness of qualitative research, as follows:

4.2.1 Credibility

This term is used to measure the accuracy of the researcher's interpretation of data by comparing the respondents' views with the researcher's explanation. Credibility can be achieved through a number of external techniques such as; cross-checking, peer examination, longitudinal observation and audit trails [328]. In order to increase the level of credibility, there are several internal processes that need to be addressed during the study, which include such concerns as the selection of participants, methods for data collection, the most meaningful unit of data, and consensus between representative quotations and the coding categories [327].

4.2.2 Transferability

This term refers to the generalisability of the study to other groups of people [328]. It has been suggested that transferability can be achieved by ensuring that every process has been thoroughly conducted, which would include a clear explanation of the effect of culture on data, data collection, the selection of representative participants and the appropriate presentation of the findings in conjunction with the relevant quotations [327].

4.2.3 Confirmability

This aspect can be assessed by ensuring that the findings are derived from the data and not from the researcher's opinions or views [328].

4.2.4 Dependability

This aspect involves other researchers in order to inspect every process of research so as to ensure that the research is thoroughly conducted, meaningful, provable and rational [328]. Moreover, Graneheim and Lundman [327] described dependability as involving *“the degree to which data change over time and alterations made in the researcher's decisions during the analysis process”*.

4.3 Reflexivity

When conducting qualitative study, due to the nature of the qualitative method, reflexivity must be considered, the researchers need to reflect upon their own perceptions on the study [325]. This specific term is related to the effect of the researcher on the study in terms of biases in data interpretation and the potential influence of the researcher during the process of data collection [323, 325]. In relation to health services research, the identity of the researcher needs to be taken into account, specifically when a healthcare professional is conducting the study. This may be due to the fact that the participants may be aware of being tested by the researcher [325]. The reflexivity effect can also be seen in terms of the researcher's characteristics such as; age, sex and social class, and the familiarity of the researcher with the research [326].

4.4 Social desirability bias

Social desirability is another problem than might occur during the interviews, as the respondents may answer the questions in terms of what they believe is more desirable for the researcher [325].

4.5 The Hawthorne effect

The Hawthorne effect is used to describe the impact of the researcher on an individual's responses given that the respondents may be aware of being observed or interviewed. It has been suggested that this effect can be reduced by conducting the research as inconspicuously as possible, ensuring that the respondents feel comfortable and maintaining their anonymity and confidentiality [325].

4.6 Attention to negative cases

It has been suggested that the quality of qualitative data can be improved by investigating contradictory evidence emerging from the data, which has been defined as "*deviant case analysis*". This method will help the researcher to thoroughly examine all the possible cases emerging from the study [326].

4.7 Fair dealing

Last but not least, it has been suggested that the researcher should treat all the cases arising from the study equally in order to ensure that all the perspectives have been covered and that they represent possible situations that might occur in the real world [326].

5. How qualitative complements quantitative study?

Pope and Mays [324] suggested that qualitative can complement quantitative research in three ways. Firstly, qualitative study can be used as a method for conducting preliminary research in order to allow the researcher to familiarise themselves with the research and to understand respondents' behaviour in a certain setting. Second, it can be used as an additional and complementary method to quantitative study, which can be seen as a part of triangulation. Finally, the qualitative method can be used to further examine the issues in ways that can not be achieved in quantitative study.

In relation to this study, the qualitative results serve two purposes: first, they formed a part of the validation process (triangulation, which involves with using different methods to examine the topic of interest in different levels) and second, they were able to explore some areas in more depth than could be achieved using quantitative methods [324].

Interviews with first year university students

Twenty first year undergraduate students were chosen from a sample of survey respondents to conduct semi-structured interviews in order to examine young adults' attitudes towards body image views and the influence of sociocultural pressures.

1. Rationale for conducting interviews with university students

Although a number of studies had investigated body image views and influences among US college students and adolescents, only a few had examined this issue in the UK population. A study by Wertheim et al. [88] showed that most research on eating behaviours tended to use a questionnaire method for example; a study to examine the effects of sociocultural factors on body image and weight control behaviours. On the other hand, interviews have generally been used in some high-risk cases such as eating disorder problems. As a result of a lack of research in the qualitative study of body image perception and its influences, a semi-structured interview was the most appropriate method for collecting data. This method is appropriate as it allows the researcher to investigate the perspectives and experiences of participants by using open-ended questions rather than questions with a restricted set of answers. Moreover, it provides an opportunity to explore any new and interesting information that might emerge from the interview. However, there are some limitations that might occur when conducting the interviews for example; misinterpretation of data where the interviewees may fabricate their answers from what they consider to be socially desirable rather than describe what they actually think or do, and the time-consuming nature of data analysis [109].

2. Developmental stage of the interview schedule

There were three stages in developing the interview schedule. The first stage was to determine the contents and sequence of questions in the interview guideline. The second stage was to test the interview guideline by conducting a pilot interview. The last stage was to resolve the problems arising from the first interview guideline and to improve the clarity and continuity of the questions.

2.1 Developing questions for the interviews

In the first part of the interview, influences were discussed without any reference to body image. Questions were intended to ease them into talking about influences, for example, *“Who is your favourite celebrity? and Why do you like them?”*. After that, the questions were more focused on body image and the students’ feelings about their own body.

The interview schedule (see Appendix 8) consisted of three areas: perception of body image, experience of using weight control methods and pressures from family, friends and the media. The questions in each part were developed by the researcher and adapted from a survey of US adolescents [88] and a qualitative study of US adolescent girls [109]. The first set of questions about the perception of body image were adapted from a study by Neumark-Sztainer et al. [88] such as; *“At this time do you feel that you are...?”*. Questions about the experience of using weight control methods were modified from Wertheim’s study and the abovementioned study for example; *“Have you ever been on a diet?”*, *“Do you watch your weight?”*, and *“Have you done any of following things in order to lose weight or keep from gaining weight during the past year?”* [88, 109]. Finally, some questions about the pressures from family, friends and the media were adapted from a study by Wertheim et al. [109] such as; *“How often do your friends talk about weight, weight loss and dieting?”*, *“Did your parent know about the dieting?”* and *“What did they think about it?”*.

2.2 Pilot study

Two final year undergraduate students volunteered to participate in the pilot study. Each participant was given the information sheet and consent form, which were developed for the interview study with first year students (Appendix 9). A convenient date and time was arranged for conducting the interview. It should be noted that due to the differences between the age of the pilot interviewees and the targeted samples, the results from the pilot study were not included in the final study. The interview took about 30 minutes and was tape-recorded. Open-ended questions were interspersed with closed questions, depending on the response of the

interviewee. However, the order of questions was changed according to the circumstances of each interview.

The main body of the interview asked students to express their opinions about factors which may influence them to use weight control products and find out how they obtain information about these products. Questions varied according to the answers from each student: there are two sets of questions – one relating to students' concern with their body image and another about their opinions regarding influences from sociocultural pressures to have the 'ideal body'. During the interview, examples of weight control product websites (see Appendix 10) were shown to participants in order to examine to what extent weight control product adverts influence them to try products. Before finishing the interview, each participant was given a short questionnaire about the interview and other related topics such as; foods, magazines, and the Internet.

Tapes from the interviews were transcribed verbatim. These transcriptions were analysed in order to determine whether the questions asked resulted in responses which could be analysed to investigate attitudes of young adults about weight control product. They also provided feedback for the interviewer about improving interviewing technique.

The results from the pilot study indicated that the sequencing of questions seemed not to be a problem but that the questions should be broader. For example, the question about weight loss strategies should not be limited only to products but should be open to any methods that the young adults might have used to lose weight. In terms of influences on body image concern, instead of focusing on sociocultural influences (the media, family and friends), this section should begin with a broader question followed by asking specific questions for each sociocultural factor.

2.3 Finalising the interview schedule

By resolving the problems arising from the pilot study, the order of questions in the full interview study was rearranged and grouped into six sections: leisure activities, role models, body image, body change strategies, sociocultural influences (family, friends and the media) and weight control advertisements. Supplementary questions were added into the section concerning sociocultural influences. These included a

general question about influence of trying to change weight such as “*Do you think, what might influence you to try to change the way you look?*”, and specific questions to investigate each individual factor. Moreover, during the time of interview, the AtkinsTM diet was receiving considerable attention from the publics and the media, therefore the researcher decided to include a question about this diet in the new interview schedule (see Appendix 11).

Finally, the researcher decided not to use the short questionnaire at the end of the interview due to the questions being somewhat related to what participants had already been asked in the interview.

3. Recruitment of the participants

In order to address this problem among university students, a convenience sample of first-year undergraduate students at the University of Nottingham was selected. For the recruiting process, the participants were randomly chosen from three schools across three different faculties; School of Pharmacy (Faculty of Science), Business School (Faculty of Law and Social Sciences) and School of Engineering (Faculty of Engineering). A poster and a short talk before lectures were used to recruit the students; however, only lecturers from the School of Pharmacy and Business School gave permission to advertise the project. An e-mail was circulated to all first-year students in the School of Pharmacy, due to a low response rate after using this method. Unfortunately, permission was not given to e-mail first year students in the other two schools.

4. The interview process

After potential participants had contacted the researcher, the information sheet was sent by e-mail, followed by the arrangement of a convenient date and time for interview. Before the interview was conducted, each participant was asked to read the information sheet and sign the consent form. Each interview was tape-recorded and took a maximum of 30 minutes.

The interview examined participants’ attitudes towards body image and the effect of sociocultural factors and investigated their experiences of using weight change

methods and the effect of weight control product advertisements. It should be noted that the order of questions varied depending on the responses from each participant.

5. Credibility and dependability of the study

It has been suggested that reliability and validity in a context of qualitative study can be achieved by enhancing the dependability or credibility of the research method [329]. For enhancing the credibility of the data, there are three issues that need to be taken into account: interview process, data processing and analysis [321]. During the process of developing the interview schedule, questions were developed based on the relevant studies and reviewed by other researchers and the University Ethics Committee Panel. Before the interview commenced, the researcher chose to conduct an initial pilot study. This allowed the researcher to validate and clarify the content and the sequence of questions and to be familiar with the communication patterns of university students. Regarding the selection of participants, the participants in this study were selected from three different faculties in the University of Nottingham in order to ensure the variety of views on body image across different courses of study. In terms of data collection, the researcher conducted the interviews based on the responses of the participants rather than the interview guideline. Moreover, the researcher have asked follow-up questions or paraphrased the questions in order to clarify some ambiguous answers or responses. Finally, in terms of data analysis, although the researcher chose constant comparison analysis method, the results emerging from the study are also compared with the results from the survey study and other relevant studies to enhance the generalisability of the results.

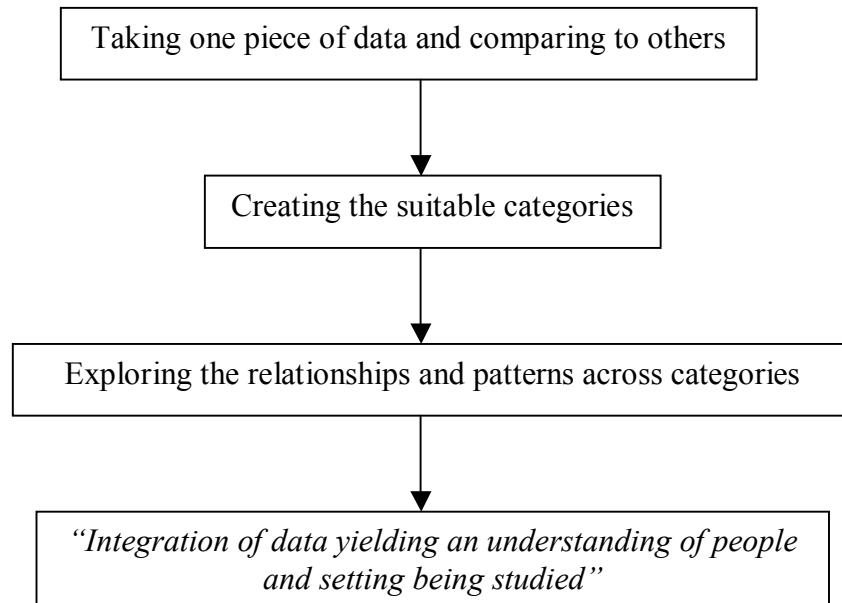
In order to ensure the validity or dependability of the results and the consistency of data interpretation, all the transcripts and the findings from the interview were cross-checked and amended by the other two researchers.

6. Data analysis

Regarding the research questions, this study aimed to investigate how university students perceive their body image and the impact of sociocultural factors. The constant comparison method was chosen to analyse the data. This analytical approach was originally used by Glaser and Strauss [330] for generating grounded theory. This technique allows the researcher to define concepts inductively from the

similarities and differences arising from the data until saturation is reached (no new emerging concepts) [331, 332]. It has been suggested that there are four critical stages for using this approach (Figure 16).

Figure 16: Inductive process of constant comparison theory from Maykut and Morehouse [333]



As far as the method is concerned, Boeije [331] has suggested that the constant comparison technique shows high internal and external validities, as a result of the thorough analysis of the conversation from each participant and concepts having been generated from a reasonable number of participants.

In relation to this study, each interview was transcribed verbatim and analysed by the constant comparison method in order to generate themes from the interview with young adults. Regarding the interview schedule, it covered six main topics such as role models, body image and sociocultural influences. As a result, all the transcripts were analysed by comparing the similarities and differences between each participant, followed by generating themes relating to the findings arising from each topic. Additionally, the researcher further investigated the effect of culture differences on body image views and influences between home and international students.

RESULTS

This section is comprised of results from the survey of students, followed by the interview study of views on body image and the factors influencing body image.

Part 1: Survey study

1. Characteristics of respondents

Questionnaires were distributed to 1,855 first year undergraduate students across six faculties at the University of Nottingham. A total of 397 questionnaires were returned, four were unusable, thus 393 (21%) were used in the analysis. Thirty percent (n=117) of the respondents were men and 70% (n=276) were women.

The mean age of the respondents was 19 years (Table 16). Over 80% of respondents were aged 18 or 19 years. In order to examine the effect of age, the respondents were categorised into two age groups, 17-20 years and over 20 years (Table 17).

Table 16: Age distribution of respondents (n=386)

Age (years)	17	18	19	20	21	22	23	24	>25
Number of respondents	1	130	165	56	17	4	5	1	7

Table 17: Age group and gender of respondents (n=393)

	Age Group		Total
	17-20 years	>20 years	
Men	104 (89%)	13 (11%)	117 (30%)
Women	248 (93%)	21 (8%)	269 (70%)
Total	352 (90%)	34 (10%)	386

The majority of respondents were currently studying in the School of Pharmacy, followed by the Business School and School of Medical and Surgical Sciences. Response rates varied across schools and the number of responses was not related to the numbers of students in the schools. The number of men and women responding

varied across the six faculties (Table 18). Over half of the male respondents were students from the Faculty of Law and Social Sciences, whereas the majority of the women were studying in the Faculty of Science.

Table 18: Distribution of the respondents by faculties and genders

Faculty	Number schools surveyed	Men		Women	
		N	%	N	%
Faculty of Arts	4	3	3	17	7
Faculty of Education	1	0	0	2	1
Faculty of Engineering	3	19	17	3	1
Faculty of Law and Social Sciences	7	59	52	84	33
Faculty of Medicine and Health Sciences	3	13	12	47	19
Faculty of Science	5	18	16	99	39
Total	23	112	100.0	252	100.0

Note: Due to a low number of respondents in the Faculty of Arts and Education, statistical analysis will not be performed.

Comparison with University of Nottingham data for all registered first year students suggests that the respondents were more likely to be women (70% of survey respondents were women compared with 55% of all first year students). Comparison of respondents to the distribution of students across the six faculties found that survey responses were highest in the Faculty of Law and Social Sciences and lowest in the Faculty of Education. However, the exact numbers and gender breakdown of students attending the lectures in which the questionnaire was distributed is unknown.

2. Perspectives of body image

Body image combines several aspects of attitudes towards one self and a desired self. The survey asked about four areas: body image perception, body dissatisfaction, body part dissatisfaction and body image concern.

2.1 Body image perception

Students were asked to rate their feeling towards their own appearance on a five-point scale, ranging from extremely satisfied to extremely dissatisfied. Over two-thirds of respondents felt moderately or extremely satisfied with their appearance. However, nearly 2% felt “*extremely dissatisfied*” about the way they looked (Table 19). Over one-third of women reported being at least moderately dissatisfied with body image, whereas more than 80% of men exhibited a general satisfaction with their appearance. There were no significant differences in body satisfaction by age group ($\chi^2=0.117$, $p=0.732$).

Table 19: Satisfaction with appearance by gender and age group (n=392)

Rating scales	Number of respondents				
	Men (n=118)	Women (n=274)	Age 17-20 (n=352)	Age >20 (n=34)	Total (n=392)
Extremely satisfied	20 (17%)	6 (2%)	25 (7%)	1 (3%)	26 (7%)
Moderately satisfied	77 (66%)	173 (63%)	223 (63%)	22 (65%)	250 (64%)
Moderately dissatisfied	16 (14%)	70 (26%)	79 (22%)	7 (21%)	86 (22%)
Dissatisfied	3 (3%)	20 (7%)	21 (6%)	2 (6%)	23 (6%)
Extremely dissatisfied	1 (1%)	6 (2%)	4 (1%)	2 (6%)	7 (2%)

Women in the faculty of Engineering were most likely to report being dissatisfied with their bodies (Figure 17). Interestingly, all of the men from the Faculty of Engineering and the Faculty of Medicine and Health Sciences reported being satisfied with their appearance (Figure 18).

Figure 17: Body image perception among women across faculties

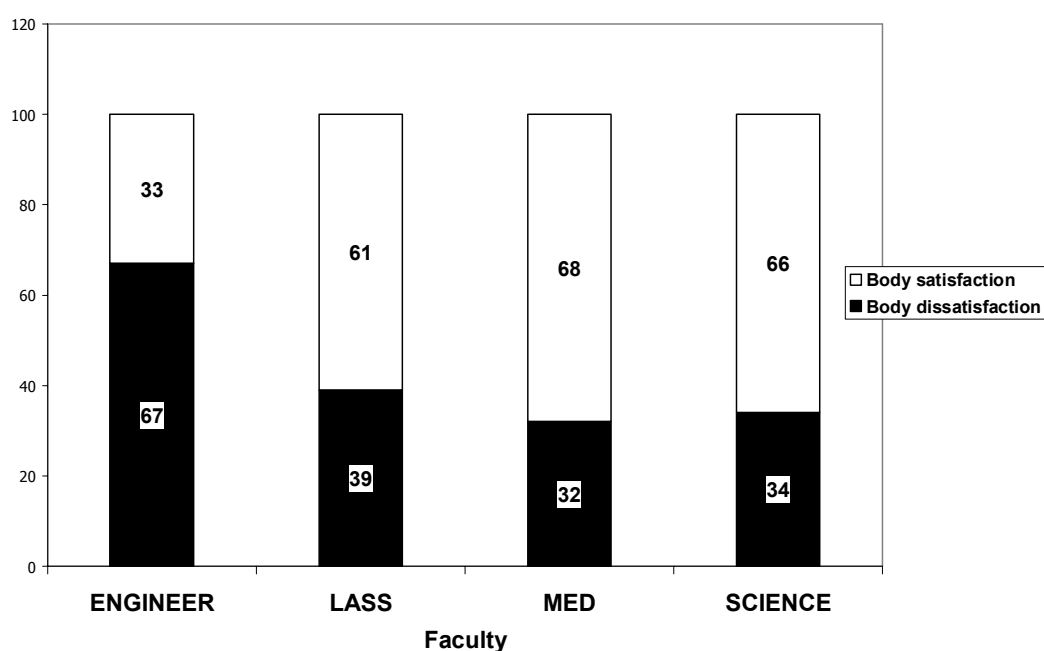
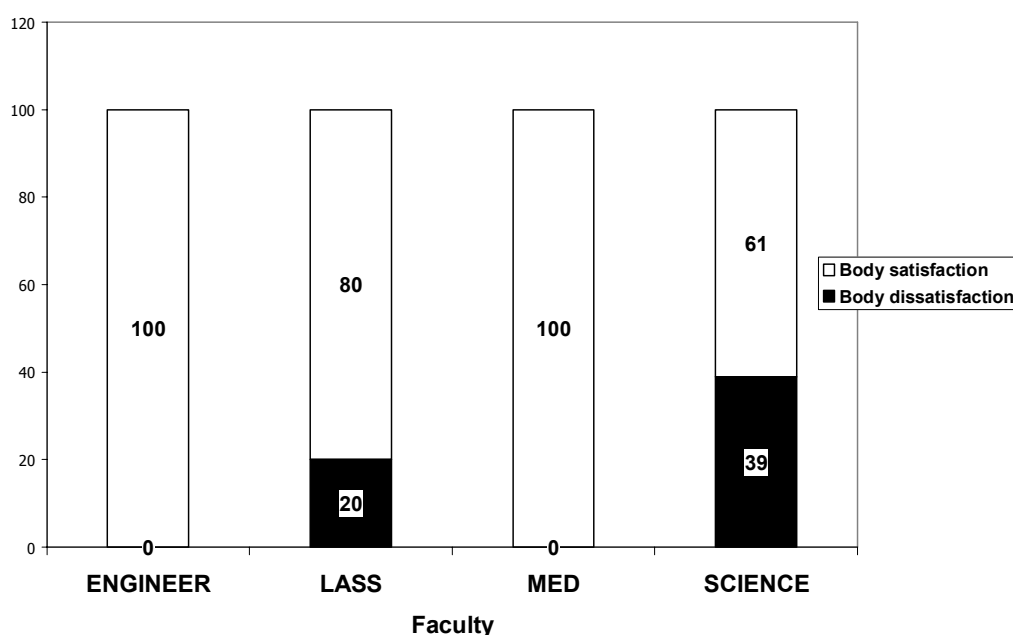


Figure 18: Body image perception among men across faculties



Notes: Lass = Faculty of Law and Social Sciences

Med = Faculty of Medicine and Health Sciences

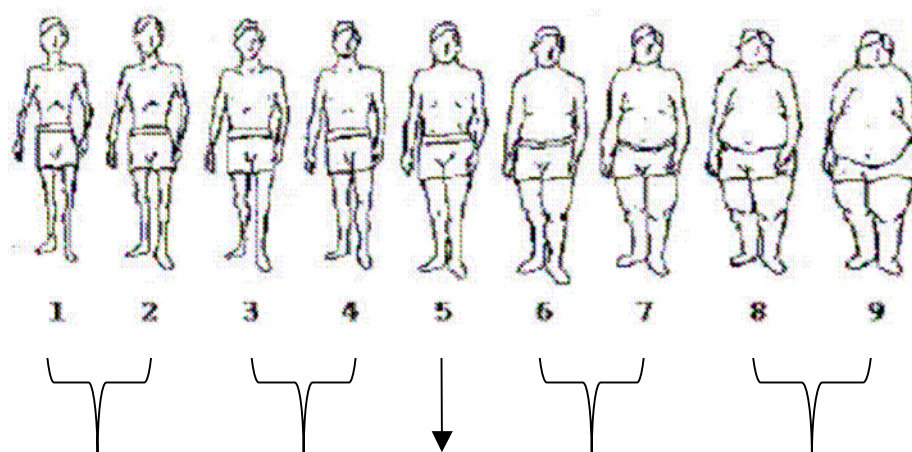
Overall these results show that more than two-thirds of students were satisfied with their body. Whilst there was no effect by age group and only a small effect by courses of study, women were more likely than men to be dissatisfied with their body.

2.2 Body dissatisfaction

The Figure-rating scales (FRS) ranging from 1 (very thin) to 9 (very overweight) were used to examine the respondents' perceptions of their current and ideal body shape and to assess body image discrepancy (BID) by calculating the difference between the current and the ideal body image.

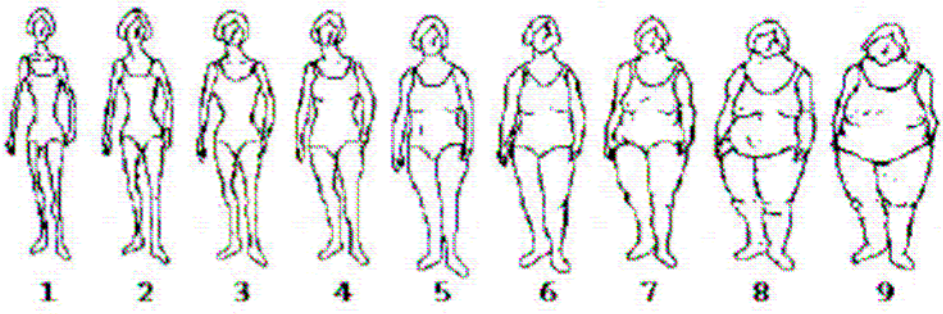
According to the perception of body image, the images were classified into five categories as shown in Tables 20 and 21. Overall, women perceived themselves to be heavier than men and chose significantly thinner ideal body image. However, there was no difference between the men's mean perceived body size and the mean ideal body image. The results also showed that over 25% of the women perceived themselves as being overweight, whereas the same number of men considered themselves as being underweight. In relation to the figures they wanted to resemble, women preferred the underweight figures, while men often chose the normal figures.

Table 20: Frequency and percentage of male respondents rating current and ideal body image



	Under weight	Normal	Slightly overweight	Moderately overweight	Very overweight
Current (n=117)	32 (27%)	68 (58%)	11 (9%)	5 (4%)	1 (1%)
Mean	3.32 ± 1.20				
Ideal (n=115)	17 (15%)	94 (82%)	3 (3%)	0	1 (1%)
Mean	3.32 ± 0.93				

Table 21: Frequency and percentage of female respondents rating current and ideal body image



	Under weight	Normal	Slightly overweight	Moderately overweight	Very overweight
Current (n=275)	56 (20%)	148 (54%)	47 (17%)	19 (7%)	5 (2%)
Mean	3.73 ± 1.39				
Ideal (n=272)	127 (47%)	143 (53%)	2 (1%)	0	0
Mean	2.65 ± 0.78				

There were differences in the current and ideal images selected by age group. Women age 17 to 20 years chose heavier pictures to represent their current body shape than those aged over 20 years (3.76 ± 1.30 compared with 3.33 ± 1.85). Furthermore, women in the younger group were more likely to select the 'normal' images as their ideal body shape (Table 22).

Table 22: The comparison of current and ideal body image among women across age groups

Rating figure	No. of women aged 17-20		No. of women aged >20	
	Current (n=248)	Ideal (n=246)	Current (n=21)	Ideal (n=19)
Underweight (1-2)	45 (18%)	106 (43%)	9 (43%)	15 (79%)
Normal (3-4)	138 (56%)	138 (56%)	7 (33%)	4 (21%)
Slightly overweight (5)	43 (17%)	2 (1%)	4 (19%)	0
Moderately overweight (6-7)	19 (8%)	0	0	0
Very overweight (8-9)	3 (1%)	0	1 (5%)	0

In terms of body image discrepancy (BID), the total scores were categorised into 3 groups, which were no discrepancy (0), positive discrepancy (current>ideal) and negative discrepancy (current<ideal). With regard to Table 23, almost 70% of women wished to be thinner, whereas over one-third of men wanted to be larger and another one-third wanted to be thinner.

Table 23: Body image discrepancy among respondents

Body image discrepancy	No. of Women (n=271)	No. of Men (n=115)
No difference	65 (24%)	33 (29%)
Positive discrepancy	185 (68%)	38 (33%)
Negative discrepancy	21 (8%)	44 (38%)

According to the effect of study course, among women who reported positive discrepancy in the current-ideal body image, the majority of them were studying in the Faculty of Medicine and Health Sciences and the Faculty of Law and Social Sciences. On the other hand, more than 60% of the men in the Faculty of Engineering rated their current body shape smaller than their ideal body shape (see Tables 24 and 25).

Table 24: Body image discrepancy score for men across four faculties, percentage reporting each level

Faculty	Body Image Discrepancy		
	Negative	No	Positive
Engineer (n=18)	11 (61%)	5 (28%)	2 (11%)
LASS (n=58)	19 (32%)	16 (28%)	23 (40%)
Medicine (n=13)	5 (39%)	5 (39%)	3 (23%)
Science (n=18)	7 (39%)	3 (17%)	8 (45%)

Table 25: Body image discrepancy score for women across four faculties, percentage reporting each level

Faculty	Body Image Discrepancy		
	Negative	No	Positive
Engineer (n=2)	0	1 (50%)	1 (50%)
LASS (n=83)	7 (8%)	15 (18%)	51 (74%)
Medicine (n=46)	3 (7%)	9 (20%)	34 (74%)
Science (n=99)	6 (6%)	29 (29%)	64 (65%)

In summary, over two-thirds of women perceived themselves as being overweight and wished to be thinner. However, around one-third of men wanted to be larger and another one-third wanted to be thinner. Education and age differences had only a slightly effect on how students feel about body image.

2.3 Body parts dissatisfaction

In terms of body part satisfaction, the results show that women reported being more satisfied with their hair, followed by face and legs, while men most often selected face, followed by arms and legs. Interestingly, the abdomen was described as a body part that the majority of participants of both genders felt most dissatisfied with.

The χ^2 analysis showed that women were more satisfied with their hair than men ($\chi^2=6.182$, $p=0.013$), whereas men were more likely to be satisfied with their abdomen than women as shown in table 26 ($\chi^2= 4.996$, $p=0.025$).

Table 26: Frequency and percentage of respondents reporting a body part as “like the most”

Body part	No. of respondents rating body parts as satisfactory	
	Men (n=115)	Women (n=271)
Hips	1 (1%)	11 (4%)
Hands	15 (13%)	35 (13%)
Legs	18 (16%)	43 (16%)
Buttocks	8 (7%)	23 (9%)
Hair*	13 (11%)	60 (22%)
Abdomen*	12 (10%)	12 (4%)
Face	20 (17%)	45 (17%)
Chest/Breast	10 (9%)	33 (12%)
Arms	19 (17%)	31 (11%)

* Significant differences between men and women, two-sided Chi-squared Test

Hips, buttocks and legs were mostly rated as the dissatisfactory body parts among women, while men were more dissatisfied with their hands, hair and arms than women (Table 27).

Table 27: Frequency and percentage of respondents reporting a desire to alter each body part

Body part	No. of respondents rating body parts as dissatisfactory		χ^2 and p value
	Men (n=113)	Women (n=274)	
Hips*	2 (2%)	39 (14%)	$\chi^2=13.121, p<0.001$
Hands*	7 (6%)	0	$\chi^2=17.286, p<0.001$
Legs*	10 (9%)	62 (23%)	$\chi^2=10.030, p=0.002$
Buttocks*	4 (4%)	29 (11%)	$\chi^2=5.090, p=0.024$
Hair*	11 (10%)	8 (3%)	$\chi^2=7.959, p=0.005$
Abdomen	35 (31%)	95 (35%)	$\chi^2=0.490, p=0.484$
Face	15 (13%)	29 (11%)	$\chi^2=0.575, p=0.448$
Chest/Breast	20 (18%)	36 (13%)	$\chi^2=1.344, p=0.246$
Arms*	16 (14%)	11 (4%)	$\chi^2=12.687, p<0.001$

* Significant differences between men and women, two-sided Chi-squared Test

When considering the age of respondents, the abdomen was reported as the body part that students in both age groups were most dissatisfied with (Table 28). The younger students were less likely to be dissatisfied with their face and arms compared with older students, otherwise there were no differences by age group.

Table 28: Frequency and percentage of respondents across age groups reporting dissatisfaction with body parts

Body part	Age 17-20 (n=347)	Age over 20 (n=34)	χ^2 and p value
Hips	34 (10%)	7 (21%)	$\chi^2=3.754$, p=0.053
Hands	7 (2%)	0	$\chi^2=0.699$, p=0.403
Legs	64 (18%)	6 (18%)	$\chi^2=0.013$, p=0.909
Buttocks	29 (8%)	3 (9%)	$\chi^2=0.009$, p=0.925
Hair	17 (5%)	2 (6%)	$\chi^2=0.063$, p=0.802
Abdomen	119 (34%)	9 (27%)	$\chi^2=0.850$, p=0.357
Face*	35 (10%)	8 (24%)	$\chi^2=5.589$, p=0.018
Chest/Breast	50 (14%)	6 (18%)	$\chi^2=0.259$, p=0.611
Arms*	19 (6%)	8 (24%)	$\chi^2=15.329$, p<0.001

* Significant differences between two age groups, two-sided Chi-squared Test

Overall, there were gender variations in rating body parts satisfaction, whereas the abdomen was reported as the area of most concern among both genders particular in the younger respondents.

2.4 Body image concern

An adapted 8-item version of the Body Shape Questionnaire was used to determine respondents' concerns about body image. Scores for each question were added together to give a total score, ranging from 8 to 48. A higher score indicating a higher level of body image concern. When testing for reliability, the results showed that the adapted version of BSQ exhibited high internal consistency (Cronbach's $\alpha=0.92$ and the corrected item-total correlation=0.60-0.81). A Mann-Whitney Test showed that women had a significantly less positive body image than men ($U=6581.50$, $p<0.001$) (Table 29). Age of respondents was not found to affect body image concern for men ($U=556.50$, $p=0.540$) or women ($U=2546.50$, $p=0.914$). This

may imply that among the respondents, gender has a great effect on body image concern than age.

Table 29: Mean scores of body image concern by gender and age group

Gender	Age group	Mean score
Men	Age 17-20 (n=104)	16.15 \pm 6.72
	Age \geq 21 (n=12)	16.83 \pm 5.47
	Total (n=116)	16.22 \pm 6.59
Females	Age 17-20 (n=246)	24.33 \pm 8.07
	Age \geq 21 (n=21)	25.00 \pm 9.25
	Total (n=274)	24.41 \pm 8.22

The total score of each respondent can be categorised into four groups: unconcerned (≤ 19), slightly concerned (20-26), moderately concerned (27-33), and extremely concerned (> 33). As illustrated in Table 30, nearly 80% of men reported being unconcerned about body image, whereas over 50% of women were slightly or moderately worried about their body shapes.

Table 30: Frequency and percentage of cases in BSQ categories by gender and age group

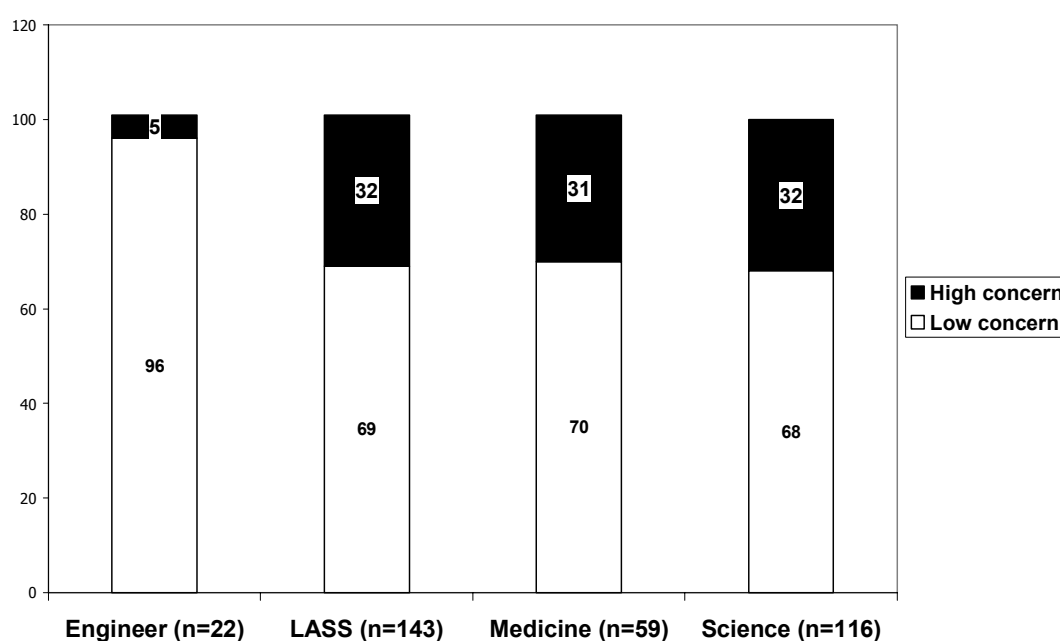
Levels of concern	Percentage of men			Percentage of women		
	Age 17-20 (n=104)	Age \geq 21 (n=12)	Total (n=116)	Age 17-20 (n=246)	Age \geq 21 (n=21)	Total (n=274)
Unconcerned	82 (79%)	10 (83%)	92 (79%)	76 (31%)	7 (33%)	86 (31%)
Slightly concerned	13 (13%)	0	13 (11%)	76 (31%)	7 (33%)	85 (31%)
Moderately concerned	7 (7%)	2 (17%)	9 (8%)	60 (24%)	2 (10%)	63 (23%)
Extremely concerned	2 (2%)	0	2 (2%)	34 (14%)	5 (24%)	40 (15%)

In terms of age, the results showed that men over the age of 20 were less likely to be concerned about body image compared with those who were younger. On the other hand, a difference between the younger and older women was only seen in the

percentages reporting moderate and extreme concern where the older women reported higher levels of body concern (Table 30).

Respondents were separated into two subgroups by the level of concern, those who reported being unconcerned and slightly concerned were grouped as having low body image concern and the others were defined as having high body image concern. The findings showed that students in the Faculty of Engineering reported lower body image concern than students in other faculties, as shown in Figure 19.

Figure 19: Percentage of respondents reporting high and low body image concern sorted by faculty



A comparison analysis showed that respondents with high body image concern were more likely to have a greater positive discrepancy between their current and ideal body figures (Table 31).

Table 31: A comparison between body image concern and body image discrepancy

Respondents	Discrepancy		
	Negative	No	Positive
High body image concern (n=112)	3 (3%)	7 (6%)	102 (91%)
Low body image concern (n=272)	60 (22%)	91 (34%)	121 (45%)

Particularly, respondents with high body image concern were more likely to perceive themselves overweight than those with low body image concern ($\chi^2=65.203$, $p<0.001$), whereas there was not a significant difference in perception of ideal body image ($\chi^2= 5.292$, $p=0.071$) as shown in Tables 32 and 33, respectively.

Table 32: A comparison between body image concern and perception of current body image

Respondents	Rating figure		
	Underweight	Normal	Overweight
High body image concern (n=113)	6 (5%)	54 (48%)	53 (47%)
Low body image concern (n=276)	81 (29%)	161 (58%)	34 (12%)

Table 33: A comparison between body image concern and perception of ideal body image

Respondents	Rating figure		
	Underweight	Normal	Overweight
High body image concern (n=113)	52 (46%)	60 (53%)	1 (1%)
Low body image concern (n=272)	92 (34%)	175 (64%)	5 (2%)

In summary, women in this study reported being more concerned about body image than men. However, the age of respondents had only a slight effect on body image concern. Interestingly, course of study also had an impact on how students expressed their concern about body image. Moreover, the findings show that a higher level of body image concern could affect body image perception in both genders, particularly the perceived current figure.

3. Weight change behaviours

In this section, the respondents were asked about their experience of trying to change weight, the time of their last weight change, the methods used and the outcomes.

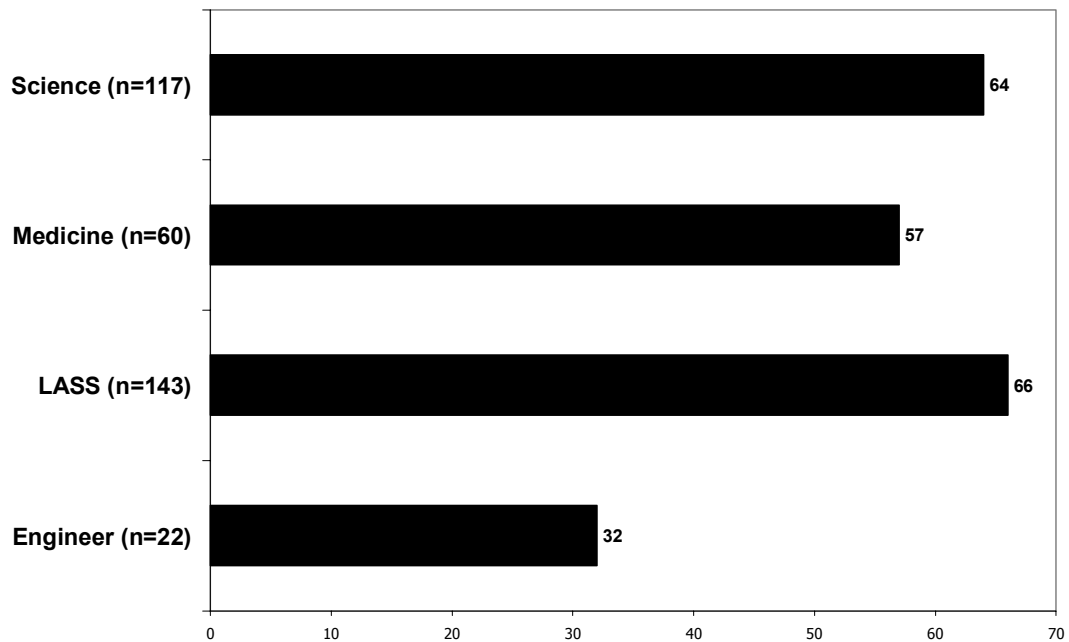
3.1 Prevalence of changing weight

The respondents were asked about their experiences of attempting to change weight. About 70% of women and 40% of men had experience of using at least one weight change strategy. Table 34 shows that there was no age difference for the experience of trying to change weight. When comparing respondents across faculties, the results illustrate that students in the Faculty of Engineering had a low prevalence of trying to change weight in comparison with other faculties (see Figure 20).

Table 34: Frequency and percentage of respondents in each age group reporting trying to change their weight

Age 17-20	Men (n=104)	42 (40%)
	Women (n=248)	178 (72%)
	Total	220 (63%)
Age>20	Men (n=13)	5 (39%)
	Women (n=21)	15 (71%)
	Total	20 (59%)

Figure 20: Percentage of respondents in each faculty with experience of changing weight



Evidence showed that high level of body image concern can lead to weight control behaviours. Unsurprisingly, respondents reporting high body image concern were more likely to report trying to change their weight, compared to those reporting low levels of body image concern (93% compared to 50%). A comparison of weight loss prevalence within each body image perception group showed that those who perceived themselves overweight were more likely to have tried weight loss strategies (See Table 35).

Table 35: Comparison between dieting and current body image perception

Experience of trying to lose weight	Current body image		
	Underweight (n=88)	Normal (n=216)	Overweight (n=88)
YES	38 (43%)	130 (60%)	76 (86%)
NO	50 (57%)	86 (40%)	12 (14%)

In conclusion, the prevalence of dieting was more common in women, those with a high body image concern and those who perceived themselves as being overweight.

Educational environment may have a slight effect on engaging in weight change behaviours.

3.2 Time of the last attempt to change weight

In relation to this question, respondents were asked when the last time was that they had tried to change their weight. Among 243 respondents who had experience of attempting to change weight, the majority reported being on a diet more than 6 months ago. Women were more likely to have lost weight during the past three months than men. Furthermore, almost half of the younger respondents had experience of losing weight in the last three months (see Table 36).

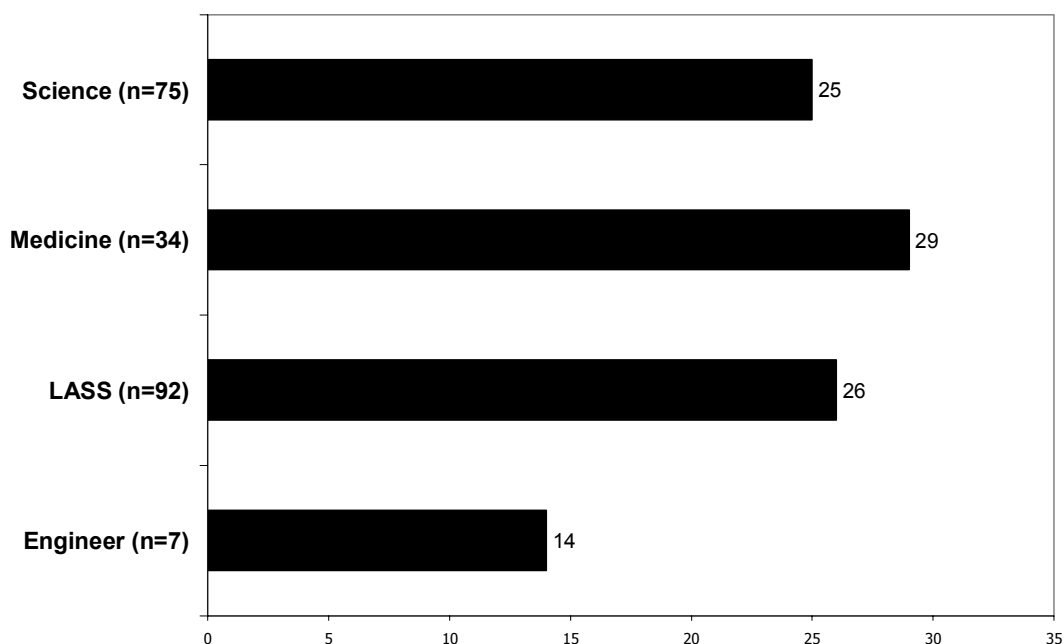
Unsurprisingly, only four respondents had attempted to lose weight several times. The results also showed that only a small number of respondents had tried to gain weight or muscle (3 men and 2 women).

Table 36: Frequency and percentage of respondents reporting time of the last attempt to change weight

Time of the last attempt to change weight	Overall (n=238)	Men (n=42)	Women (n=196)	Age 17-20 (n=213)	Age>20 (n=20)
At the moment	61 (25%)	11 (24%)	50 (25%)	54 (25%)	5 (25%)
Within one week	14 (6%)	2 (5%)	12 (6%)	12 (6%)	1 (5%)
Within one month	20 (8%)	3 (7%)	17 (9%)	17 (8%)	2 (10%)
During 3 months	23 (10%)	1 (2%)	22 (11%)	23 (11%)	0
During 6 months	30 (12%)	4 (9%)	26 (13%)	27 (12%)	3 (15%)
More than 6 months	86 (35%)	20 (44%)	66 (33%)	77 (35%)	8 (40%)
Trying more than once	4 (2%)	1 (2%)	3 (2%)	3 (1%)	1 (5%)

In relation to the effect of course of study, students in the Faculty of Engineering were less likely to be currently trying to change weight as compared to the students from other faculties as shown in Figure 21.

Figure 21: Percentage of respondents in each faculty reporting they are currently trying to lose weight



In summary, one quarter of the respondents was currently trying to lose weight. Gender, age and course of study appeared to have a small effect on the time of the last attempt at changing weight.

3.3 Weight change strategies

Respondents were asked to select method(s) that they had used to change their weight. According to weight change strategies, dieting was the most common method among those trying to change weight (see Table 37). Interestingly, most respondents chose both dieting and exercise as a method for changing weight, which is the recommended strategy for healthy weight change.

Table 37: The use of weight change strategies among respondents (n=243)

Weight change methods	Number of respondents
Dieting	207 (53%)
Under medical supervision	2 (1%)
Exercise	187 (48%)
Weight control product	30 (8%)
Others	19 (5%)

Exercising was the most selected method among men, whereas the majority of women preferred controlling their food intake. Moreover, a comparison by gender, and level of concern showed there was only a significant difference in dieting method, but there was no age difference in choice of weight control strategies (See Figures 22-4).

Figure 22: Characteristics of weight change methods reported by gender

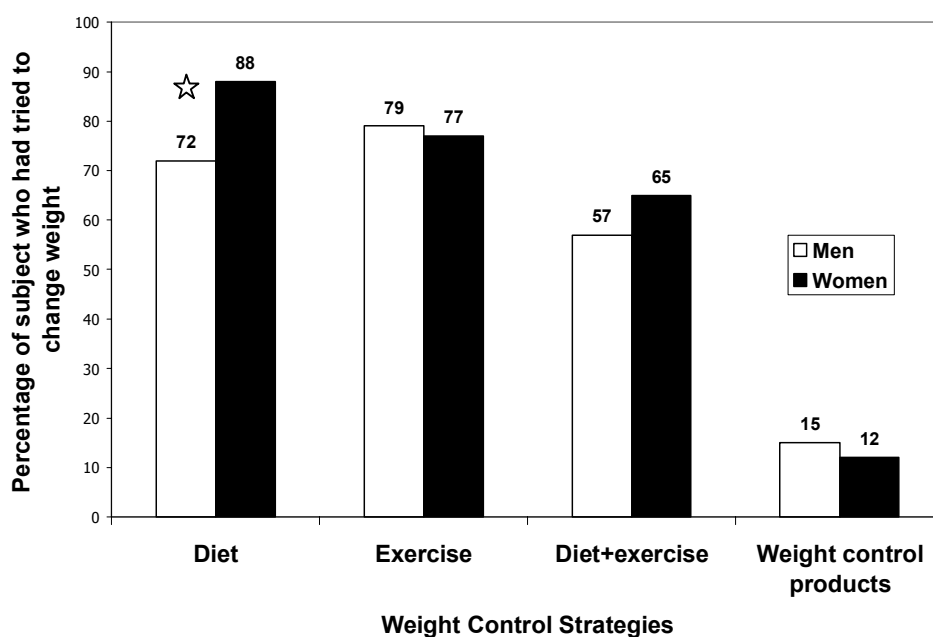


Figure 23: The prevalence of weight control strategies within each age group

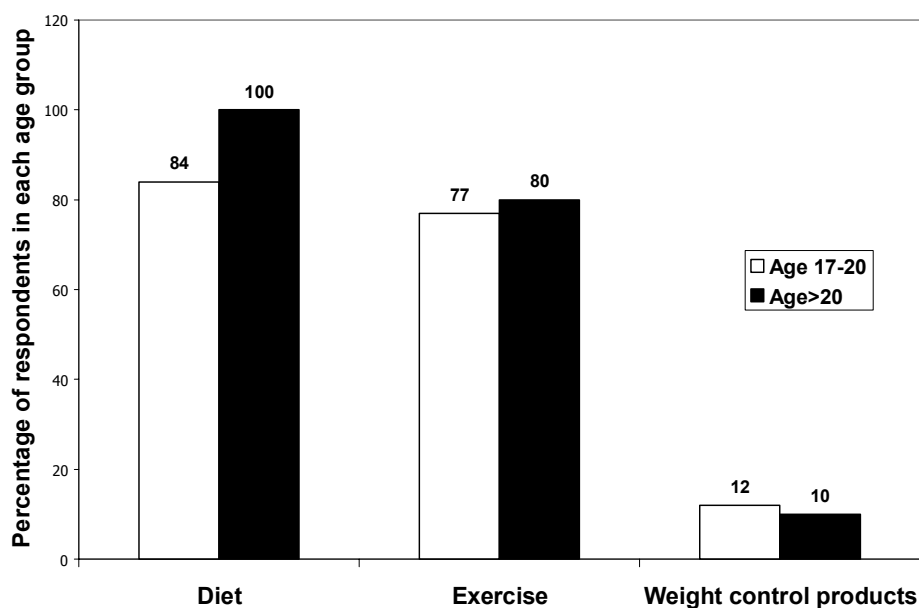
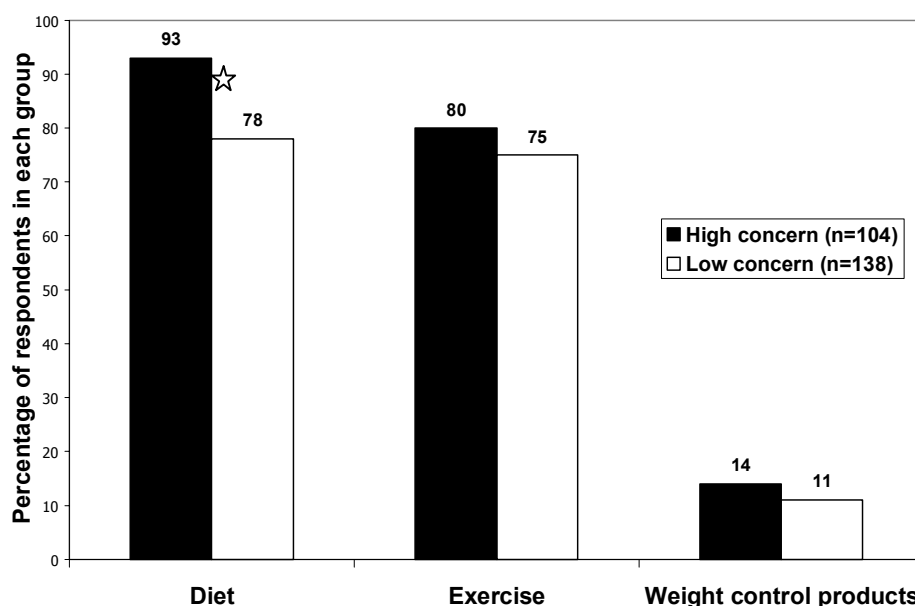


Figure 24: The prevalence of using weight control strategies by level of body image concern



☆ Significant difference, $\chi^2=14.600$ $p<0.001$

Nineteen respondents reported using other methods for changing weight. Men mentioned using weight gain products, increasing food intake and weight lifting, while women chose to control their diets such as eating more vegetables and consuming less sugary foods and snacks. Only three women reported using unhealthy weight loss methods such as vomiting, using diet pills and starvation.

Course of study appears to have an effect on engaging in weight change strategies, with respondents in the Faculty of Law and Social Sciences were more likely to be engaged in dieting, exercising and using weight control products when compared with the other faculties (see Table 38).

Table 38: Prevalence of weight control strategies by percentage of respondents in each faculty

Faculty	Percentage of respondents engaging in weight control methods		
	Diet	Exercise	Weight control products
Engineering (n=7)	4 (57%)	3 (43%)	0
LASS (n=93)	80 (86%)	76 (82%)	13 (14%)
Medicine (n=33)	28 (85%)	28 (85%)	3 (9%)
Science (n=75)	70 (93%)	51 (68%)	9 (12%)

Overall, dieting and exercising were most commonly used by respondents who tried to change their weight. However, there were only significant differences between genders and levels of body image concern in the prevalence of engaging in ‘diet’ method.

3.4 Weight change achievement and maintenance

Respondents were asked to report how successful the attempted weight change had been. However, only 17% of those who had tried to change their weight responded to these two questions. The majority of respondents reported that they had achieved the desired weight change using their chosen strategy (see Table 39).

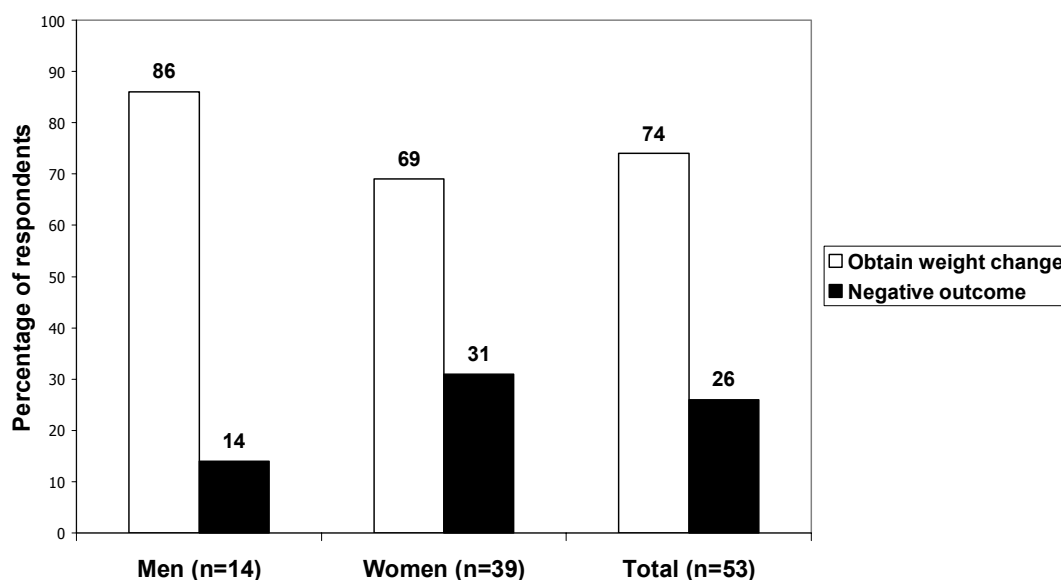
Table 39: Weight change achievement reported by respondents

Results	Frequency	Percentage
Desired weight change	23	34
Less weight change	16	24
No weight change	13	19
Achieved opposite result	1	2
Not completed using weight control strategy	15	22

Among respondents who answered this question, those who chose the last answer were not be used for further analysis in this section and the remainder were then grouped into two categories: those who selected the first two answers were grouped as “*obtained weight change*” and the other two as “*negative outcome*”.

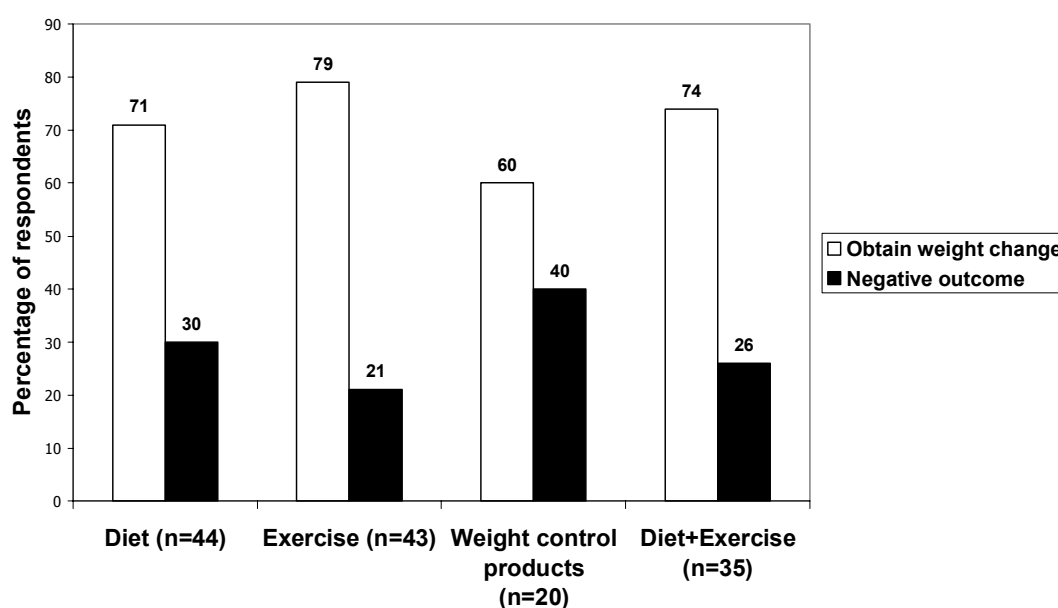
Over 80% of men achieved some weight change, whereas around 30% of women obtained negative results (Figure 25).

Figure 25: Weight change outcomes among men and women (n=53)



Among the weight change methods, exercising was the most successful method to change weight, followed by using a combination of dieting and exercise (see Figure 26).

Figure 26: Weight change strategies and the outcomes



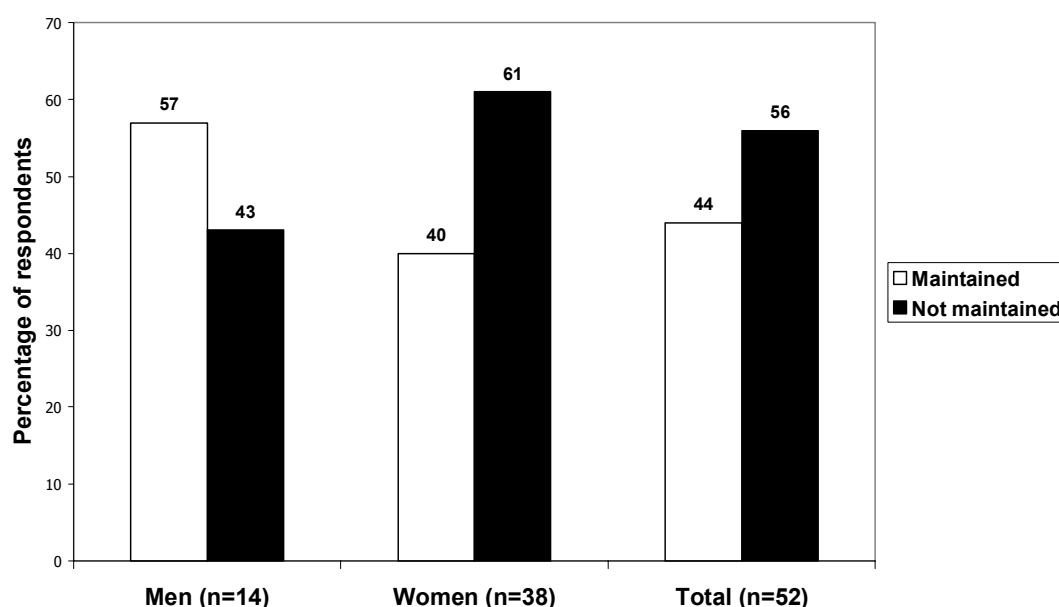
With regard to weight change maintenance, most respondents reported that they gradually regained weight, back to their original weight (Table 40).

Table 40: Weight change maintenance reported by respondents

Results	Frequency	Percentage
Weight maintained	25	40
Weight gradually back	30	48
Weight rapidly back	8	13

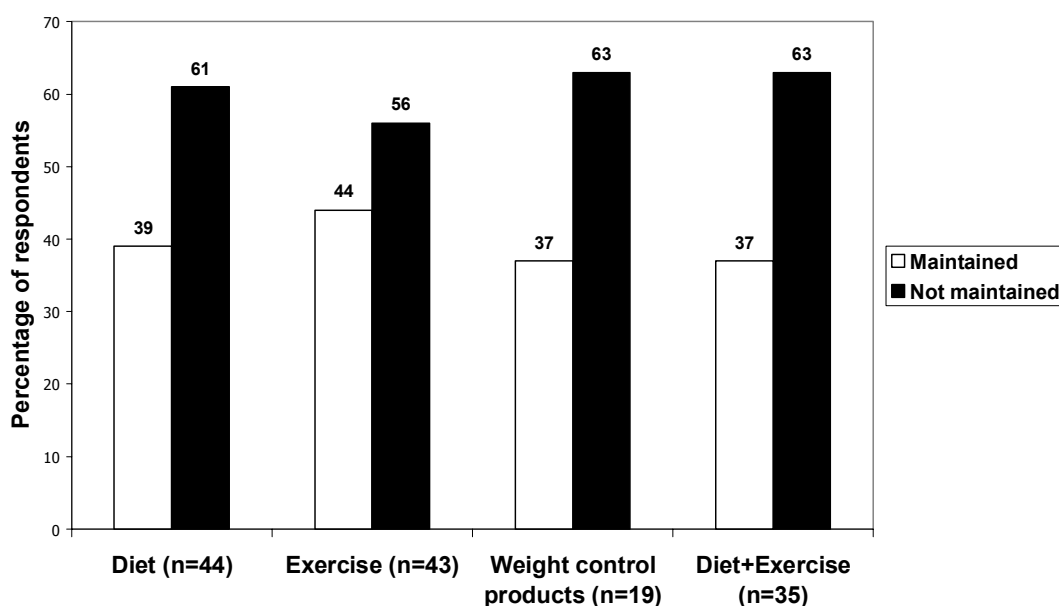
Women were less likely to maintain their weight change than men (Figure 27).

Figure 27: Gender and weight change maintenance



Interestingly, respondents who used exercise to change weight, tended to stay at their new weight compared with those who used other methods (see Figure 28).

Figure 28: Weight change maintenance and weight change methods



The results demonstrate that gender and weight change methods can affect both the achievement and maintenance of weight change. In particular, men and those who engaged in exercise were most likely to achieve and maintain weight change.

4. The effects of sociocultural influences

Sociocultural factors are composed of three main aspects: the media, parents and friends. In this survey, the respondents were asked to complete three sets of questions with regard to the effect of these influences on body image.

4.1 The media

An adapted 13-item version of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ) was used to address the effect of media on body image concerns. The question responses are summed and resulting in a total score, ranging from 13 to 65. A higher score means a higher influence from the media to attain the idealised body image. The measurements are divided into two versions depending on the respondent's gender. A reliability test demonstrated that both versions had high internal consistency ($\alpha > 0.8$). However, items 6 and 12 in the SATAQ male version exhibited low correlation with the total SATAQ score. Two dimensions have been identified to measure to the extent to which the media has an impact on the

attainment of that ideal. The first dimension is awareness, which has been defined as the process of familiarity with the ideal media images. The second process is internalization, which is considered as the important process of developing body dissatisfaction from the attempt to attain that ideal. Moreover, the ‘muscularity’ dimension was added to measure the importance of being muscular among male respondents. It should be noted that the numbers of items within each dimension are different for both genders. For women, awareness consists of five items and internalization contains eight items. For men, there are three dimensions associated with media influence, which are internalization (7 items), awareness (4 items) and muscularity (2 items).

In terms of gender effect, women exhibited more recognition and acceptance of the ideal media image than men, as indicated by the mean score of SATAQ. However, Mann-Whitney analysis indicated that there was a significant gender difference in the internalization dimension but not the awareness dimension as can be seen in Table 41.

Table 41: Descriptive analysis for SATAQ factors by gender

Factors	Women			Men			Mann-Whitney <i>U</i> test and <i>p</i> value [#]
	Mean±SD	range	N	Mean±SD	range	N	
Internalization*	25.55±5.98	8-40	269	17.28±4.94	7-29	117	<i>U</i> =7644.50, <i>p</i> <0.001
Awareness	16.87±3.31	8-25	275	13.22±2.82	6-17	116	<i>U</i> =14966.50, <i>p</i> =0.334
Muscularity	-	-	-	6.34±1.56	2-10	117	-
Total SATAQ*	42.36±7.87	21-65	268	36.83±7.48	17-53	116	<i>U</i> =9515.00, <i>p</i> <0.001

* Significant difference between men and women

[#] The test was performed based on the standardised scores ranging from 0-100 due to there were differences between a number of items on the internalization and awareness dimensions between men and women

It should be noted that the items 2 and 10 of ‘muscularity’ dimension were combined with ‘internalization’ and ‘awareness’ dimensions when analysed the mean score

differences between age groups and levels of body image concern. In relation to body image concern, respondents with a high level of body image concern were more likely to be influenced by the media than those with a low level as illustrated in Table 42.

Table 42: Descriptive analysis for SATAQ factors by level of body image concern

Factors	Low body image concern			High body image concern			Mann-Whitney <i>U</i> test and p value
	Mean±SD	range	N	Mean±SD	range	N	
Internalization*	22.16±5.84	8-38	273	28.68±4.74	16-40	111	<i>U</i> =5999.00, p<0.001
Awareness*	16.15±3.38	8-25	274	18.01±2.74	10-25	114	<i>U</i> =10588.50, p<0.001
Total SATAQ*	38.26±7.74	17-56	271	46.63±5.77	33-65	111	<i>U</i> =6014.50, p<0.001

* Significant difference between high and low body image concern

With regard to the effect of age, respondents aged over 20 showed a greater awareness of the idealised media image in comparison with those in the younger group, while there was no difference in the aspect of internalization as well as the total score of SATAQ (see Table 43).

Table 43: Descriptive analysis for SATAQ factors by age group

Factors	Age 17-20			Age>20			Mann-Whitney <i>U</i> test and p value
	Mean±SD	range	N	Mean±SD	range	N	
Internalization	23.91±6.27	8-38	347	24.41±6.05	10-39	32	<i>U</i> =5377.50, p=0.768
Awareness*	16.55±3.28	8-25	351	17.85±3.19	7-24	33	<i>U</i> =4387.50, p=0.020
Total SATAQ	40.46±8.08	20-60	346	41.84±8.14	17-60	31	<i>U</i> =4883.00, p=0.409

* Significant difference between age groups

Finally, the Kruskal-Wallis test indicated that there were significant differences in awareness, internalization and the total score of SATAQ across the faculties of study, $H=18.126$ $p=0.003$. The findings illustrate that students from the Faculty of Law and Social Sciences were the most likely to report being influenced by the media, followed by students from the Faculty of Science.

In summary, the results show that the influence of the media is different amongst students of differing genders, age, body image concern levels and courses of study. In particular, women and those reporting high levels of body image concern were most at risk of the media's influence.

4.2 Parents

Parental influence was measured using six questions regarding the effect of the father and mother across three areas: comments, the importance of the ideal body image and encouragement to change weight. Each question was scored from 1 to 5 giving a total score ranging from 6-30. Higher scores mean a greater parental effect on body image concern. The reliability test for this tool demonstrated high internal consistency, as the Cronbach's alpha has a value over 0.8 and all the items were highly correlated with the total score. Moreover, the effect of parents was measured in terms of mother and father, resulting in those who scored over 9 being considered as perceiving high pressure to change weight from their parents.

The Mann-Whitney U test was chosen to test the differences in mean scores between men and women. The overall results showed that women were more likely to perceive an influence from parents, particularly mothers, than men, as indicated by the mean scores of both genders (women= 10.28 ± 4.94 and men= 8.38 ± 3.02). When comparing all aspects in parental influences, our findings showed that only the item of father's encouragement to change weight and father's influence showed no significant differences between both genders, as presented in Table 44.

Table 44: Mean and Standard Deviations for Parental Influences Scores by gender

Parental Factors	Total sample (N=384)		Men (N=116)		Women (N=268)		Mann-Whitney <i>U</i> and p value
	Mean	SD	Mean	SD	Mean	SD	
Comments from mother ⁺	1.85	1.08	1.46	0.77	2.02	1.15	<i>U</i> =13239.50, p=0.002
Comments from father ⁺	1.51	0.87	1.31	0.66	1.60	0.93	<i>U</i> =11537.00, p<0.001
Thinness/muscularity is important to mother ⁺	1.70	1.04	1.42	0.82	1.82	1.10	<i>U</i> =12638.50, p<0.001
Thinness/muscularity is important to father ⁺	1.42	0.81	1.25	0.59	1.49	0.88	<i>U</i> =13496.50, p=0.005
Encouragement from mother ⁺	1.76	1.11	1.48	0.83	1.87	1.19	<i>U</i> =13341.00, p=0.003
Encouragement from father	1.46	0.92	1.45	0.87	1.47	0.94	<i>U</i> =15680.00, p=0.882
Total Mothers' Scores ⁺	5.31	2.86	4.36	1.96	5.71	3.08	<i>U</i> =11874.50, p<0.001
Total Fathers' Scores	4.39	2.20	4.01	1.63	4.56	2.39	<i>U</i> =13992.50, p=0.068
Total Parents' Scores ⁺	9.70	4.53	8.38	3.02	10.28	4.94	<i>U</i> =12222.50, p=0.001

⁺ Significant difference between men and women

In relation to the level of body image concern, the findings show that there were significant differences between respondents with high and low body image concern in all parental influence factors as shown in Table 45.

Table 45: Mean and Standard Deviations for Parental Influences Scores by level of body image concern

Parental Factors	Low concern			High concern			Mann-Whitney <i>U</i> and <i>p</i> value
	Mean	SD	N	Mean	SD	N	
Comments from mother ⁺	1.57	0.82	275	2.54	1.30	114	<i>U</i> =12045.00, <i>p</i> <0.001
Comments from father ⁺	1.39	0.74	273	1.79	1.05	111	<i>U</i> =8834.00, <i>p</i> <0.001
Thinness/ muscularity is important to mother ⁺	1.53	0.86	275	2.14	1.28	114	<i>U</i> =11527.50, <i>p</i> <0.001
Thinness/ muscularity is important to father ⁺	1.32	0.68	273	1.68	1.03	110	<i>U</i> =12049.00, <i>p</i> <0.001
Encouragement from mother ⁺	1.44	0.78	275	2.51	1.40	114	<i>U</i> =8484.00, <i>p</i> <0.001
Encouragement from father ⁺	1.31	0.75	274	1.83	1.17	110	<i>U</i> =11262.50, <i>p</i> <0.001
Total Mothers' Scores ⁺	4.54	2.05	275	7.19	3.61	114	<i>U</i> =8317.00, <i>p</i> <0.001
Total Fathers' Scores ⁺	4.02	1.72	273	5.29	2.89	109	<i>U</i> =10995.00, <i>p</i> <0.001
Total Parents' Scores ⁺	8.57	3.25	272	12.52	5.86	109	<i>U</i> =8359.50, <i>p</i> <0.001

⁺ Significant difference between high and low body image concern

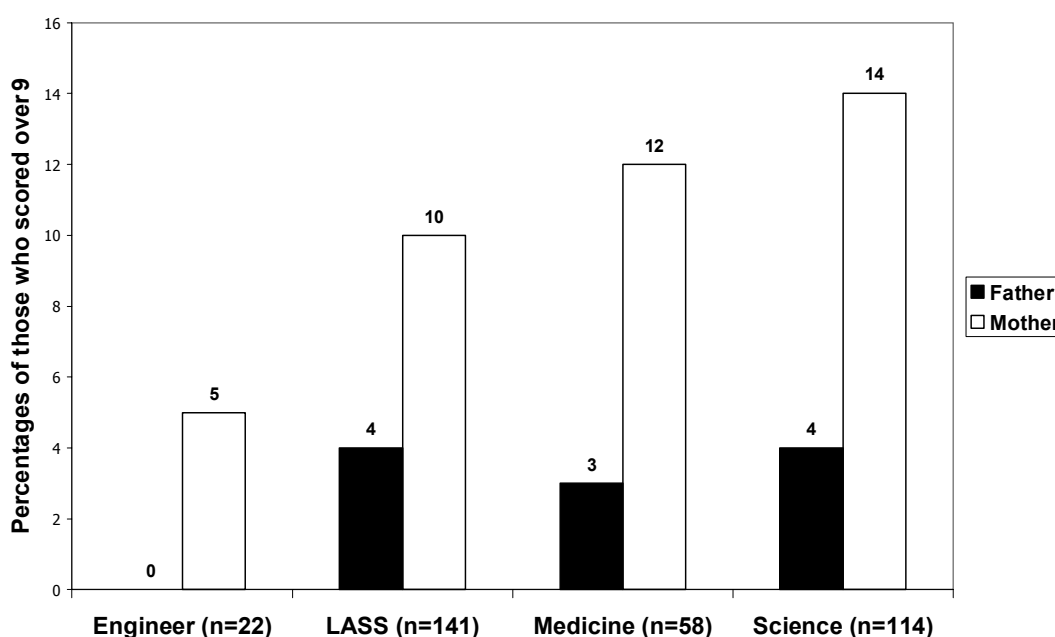
However, age of respondents had no effect on the perceived parental influences (see Table 46).

Table 46: Mean and Standard Deviations for Parental Influences Scores by age group

Parental Factors	Age 17-20			Age>20			<i>U</i> and <i>p</i> value
	Mean	SD	N	Mean	SD	N	
Total Mothers' Scores	5.32	2.85	351	5.09	2.80	34	<i>U</i> =5359.00, <i>p</i> =0.590
Total Fathers' Scores	4.38	2.18	345	4.21	1.83	33	<i>U</i> =5674.00, <i>p</i> =0.627
Total Parents' Scores	9.69	4.47	344	9.33	4.17	33	<i>U</i> =5502.00, <i>p</i> =0.729

Regarding the effect of courses of study, students in the Faculty of Science were the most likely to be influenced by their mothers, whereas fathers influence was less likely and a similar level across three of the four faculties (Figure 29).

Figure 29: Percentage of respondents in each faculty perceiving high pressure from parents



In conclusion, parents had a large influence on body image perception, particularly for women and respondents with a high level of body image concern. Moreover, most respondents perceived greater influence from their mothers about changing body weight rather than from their fathers. Age groups and study courses showed slightly effect on perceived parental influences.

4.3 Peers

The questionnaire investigates four areas of peer pressure, which are friends as a source of influence (5 items), friends' concerns about body image (1 item), influence of friends' talks (1 item) and pressure to be thin from friends (1 item). A higher score means a higher pressure perceived from friends. The new measurement exhibited high reliability, as can be seen from high internal consistency ($\alpha=0.84$) and the item-total correlation was at an acceptable level. Descriptive analysis showed that the average score of 'friends' concerns about body image' and 'friends' talks' were higher than the other dimensions as shown in Table 47.

Table 47: Descriptive data of peer pressure scores among respondents

Variables	Respondents (N=393)	
	Mean \pm SD	Range
Total Friends' scores	19.24 \pm 5.35	8-37
Friends as a source of Influence (5 items)	10.70 \pm 3.76	5-25
Friends' concerns about body image	3.23 \pm 0.92	1-5
Friends' talks	3.22 \pm 0.98	1-5
Pressure from peers to be thin	2.09 \pm 0.87	1-5

In terms of gender differences, women perceived significantly more pressure from their peers than men, across all factors (see Table 48).

Table 48: Descriptive data of peer pressure scores by gender

Variables	Men (N=117)		Women (N=276)		Mann-Whitney <i>U</i> Test and P value
	Mean±SD	Range	Mean±SD	Range	
Total Friends' scores*	16.40±4.45	9-31	20.45±5.25	8-37	<i>U</i> =8793.00, <i>p</i> <0.001
Friends as a source of Influence* (5 items)	8.95±2.99	5-18	11.45±3.81	5-25	<i>U</i> = 9616.50, <i>p</i> <0.001
Friends' concerns about body image*	2.83±0.92	1-5	3.40±0.87	1-5	<i>U</i> =10761.00, <i>p</i> <0.001
Friends' talks*	2.76±1.01	1-5	3.42±0.90	1-5	<i>U</i> =10341.00, <i>p</i> <0.001
Pressure from peers to be thin*	1.86±0.74	1-4	2.19±0.90	1-5	<i>U</i> =12969.00, <i>p</i> =0.001

* Significant difference between men and women

A comparison across the two age groups showed no significant differences in any peer pressure factors (Table 49).

Table 49: Descriptive data of peer pressure scores by age group

Variables	Age 17-20 (N=352)		Age>20 (N=34)		Mann-Whitney <i>U</i> Test and P value
	Mean±SD	Range	Mean±SD	Range	
Total Friends' scores	19.04±5.22	8-37	20.44±5.74	9-30	<i>U</i> =5036.50, <i>p</i> =0.127
Friends as a source of Influence (5 items)	10.55±3.65	5-22	11.56±3.75	5-18	<i>U</i> =4959.00, <i>p</i> =0.098
Friends' concerns about body image	3.21±0.93	1-5	3.38±0.82	2-5	<i>U</i> =5415.50, <i>p</i> =0.334
Friends' talks	3.22±0.96	1-5	3.15±1.11	1-5	<i>U</i> =5795.50, <i>p</i> =0.750
Pressure from peers to be thin	2.06±0.85	1-5	2.35±1.01	1-5	<i>U</i> =5056.00, <i>p</i> =0.107

However, the results demonstrate that respondents with high body image concern were more likely to perceive pressure from friends in all dimensions than those with a low level of concern as shown in Table 50.

Table 50: Descriptive data of peer pressure scores by level of concern

Variables	Low concern (N=276)		High concern (N=114)		Mann-Whitney <i>U</i> Test and p Value
	Mean±SD	Range	Mean±SD	Range	
Total Friends' scores*	17.73±4.62	8-30	22.92±5.12	10-37	<i>U</i> =7094.50, p<0.001
Friends as a source of Influence* (5 items)	9.79±3.21	5-18	12.91±4.03	5-22	<i>U</i> =8441.50, p<0.001
Friends' concerns about body image*	3.04±0.90	1-5	3.68±0.81	1-5	<i>U</i> =9718.00, p<0.001
Friends' talks*	3.00±0.92	1-5	3.77±0.88	1-5	<i>U</i> =8802.00, p<0.001
Pressure from peers to be thin*	1.90±0.76	1-5	2.55±0.92	1-5	<i>U</i> =9550.50, p<0.001

* Significant difference between high and low body image concern

In terms of the effect of courses of study, a significant difference was only evident between faculties in the influence of friends' talks, $H=13.368$ $p=0.020$ (using the Kruskal-Wallis test). Moreover, the mean score of this factor indicated that students in the Faculty of Science were more likely to be influenced by friends' conversations than students in other faculties (see Table 51).

Table 51: Mean scores of respondents in each faculty in the factor 'friends' talks

Faculty	N	Mean±SD	Range
Engineering	22	2.82±0.91	2-5
LASS	143	3.26±1.00	1-5
Medicine	60	3.08±0.93	1-5
Science	117	3.29±0.96	1-5

In summary, women and respondents with high body image concern experienced higher peer pressure, while age and courses of study had only a slight effect on the perceived influence of friends.

4.4 Sociocultural influences and body image concern

The literature suggests that the media, family and friends have a great influence on body image concern, therefore a correlation analysis was undertaken to investigate whether this effect was seen in our data or not. Spearman's rho correlation coefficient (r) was selected to test the relationship between each sociocultural factor and the levels of body image concern. R values range from -1 (perfect negative correlation) to +1 (perfect positive correlation). Overall, students' body image concerns had positive correlations with total scores of media, parental and peer influences.

Table 52 shows that women reported perceiving more pressure from sociocultural factors than men. In terms of the media's influence, both internalization and awareness showed positive correlation with body image concern in both genders. It should be noted that there was a strong relationship between internalization and the levels of body image concern in women. In relation to parental effect, the analysis showed that the association between body image concern and all aspects of parental influences was stronger in women than men. Only influence from fathers was significantly associated with body image concern among men. On the other hand, both parents had influence on their daughters' concerns about body image. Furthermore, all friends' factors in peer pressure were significantly associated with body image concern for both genders, the association being strongest for the aspect of friends as a source of influence.

Table 52: Correlations among sociocultural variables and body image concern among men and women

Sociocultural factors	Body image concern	
	Men	Women
Media		
• Internalization	0.512**	0.562**
• Awareness	0.200*	0.309**
Parents		
• Mother	0.143	0.391**
• Father	0.187*	0.256**
Friends		
• As source of influence	0.326**	0.401**
• Concerns about body image	0.214*	0.291**
• Conversations	0.215*	0.375**
• Pressure to be thin	0.192*	0.388**

**p<0.01, two-tailed (very good correlation)

* p<0.05, two-tailed (good correlation)

In summary, sociocultural components have an impact on the development of body image concern among university students of both genders, regardless of age and courses of study. In particular, the findings indicate that women were mostly affected by every sociocultural factor (the media, family and friends). Interestingly, women reported being influenced by their mothers, while men were most likely to be affected by their fathers (see Figures 30 and 31).

Figure 30: Model for sociocultural influence on women's body image concern

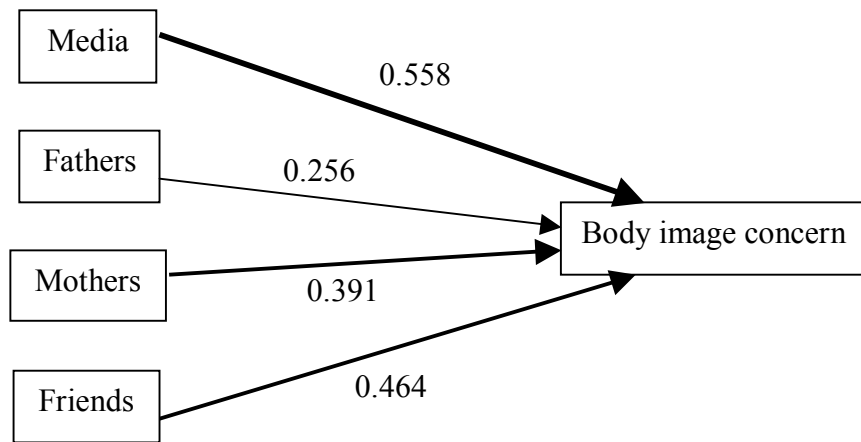
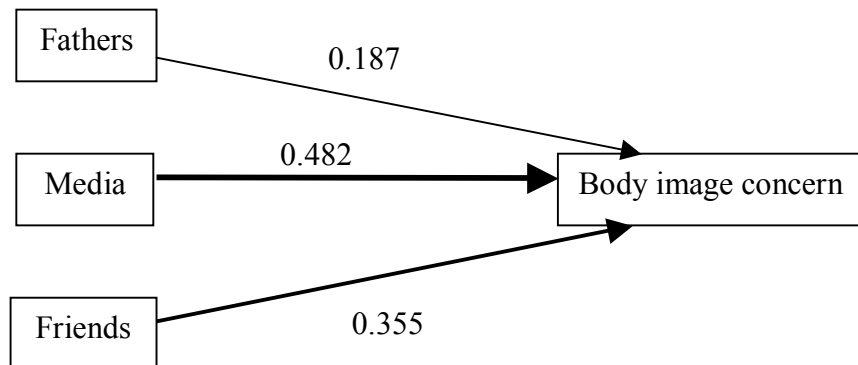


Figure 31: Model for sociocultural influence on men's body image concern



Note: The thickness of line represents the intensity of relationship

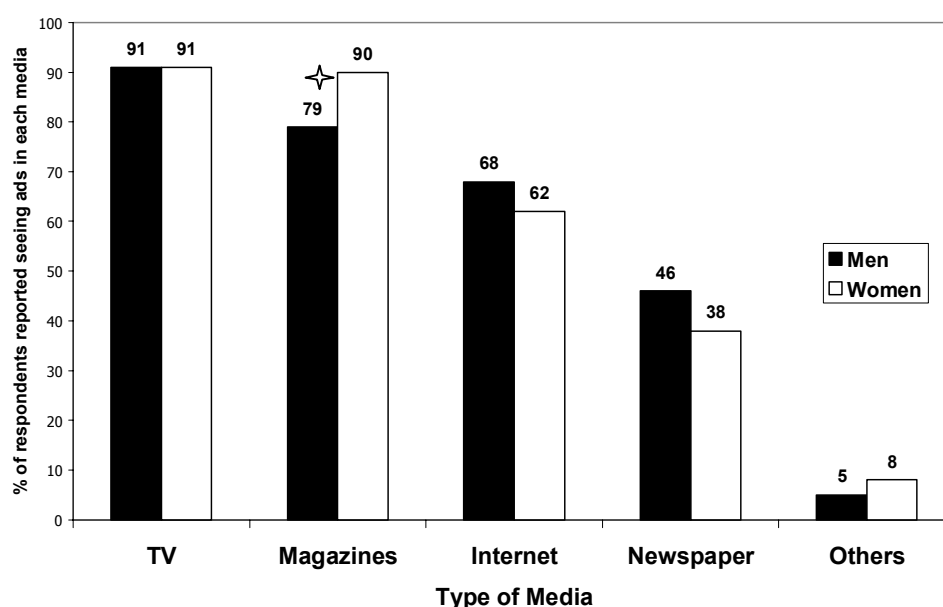
5. Weight control product advertisements

In this part of the survey, respondents were asked a series of questions in relation to the source(s) of media in which they had come across weight control product advertisements, the impact of adverts on body image and the type of product(s) they had seen advertised.

5.1 Sources of weight control advertisements

Respondents were asked about the type(s) of media in which they had seen weight control strategy advertisements. In general, 95% of the respondents of both genders had seen advertisements for weight control products before, particularly on television (Figure 32). In terms of the types of media, women were more likely to see weight control advertisements in magazines than men. Some of them also reported seeing these advertisements through other types of mass media such as billboards, catalogues or at the gym.

Figure 32: Types of mass media advertising weight control products sorted by gender



✦ Significant difference, $\chi^2=6.619$ $p=0.010$

Among respondents who had seen advertisements in each media source, the majority of them were under the age of 20 and reported having a high level of body image concern as illustrated in Tables 53 and 54.

Table 53: Frequency and percentage of respondents in each age group encountering weight control advertisements in each media

Source of Media	Age group	
	Age 17-20 (n=335)	Age>20 (n=32)
TV	307 (92%)	21 (84%)
Magazines	292 (87%)	27 (84%)
Internet	216 (65%)	19 (59%)
Newspaper	131 (39%)	17 (53%)

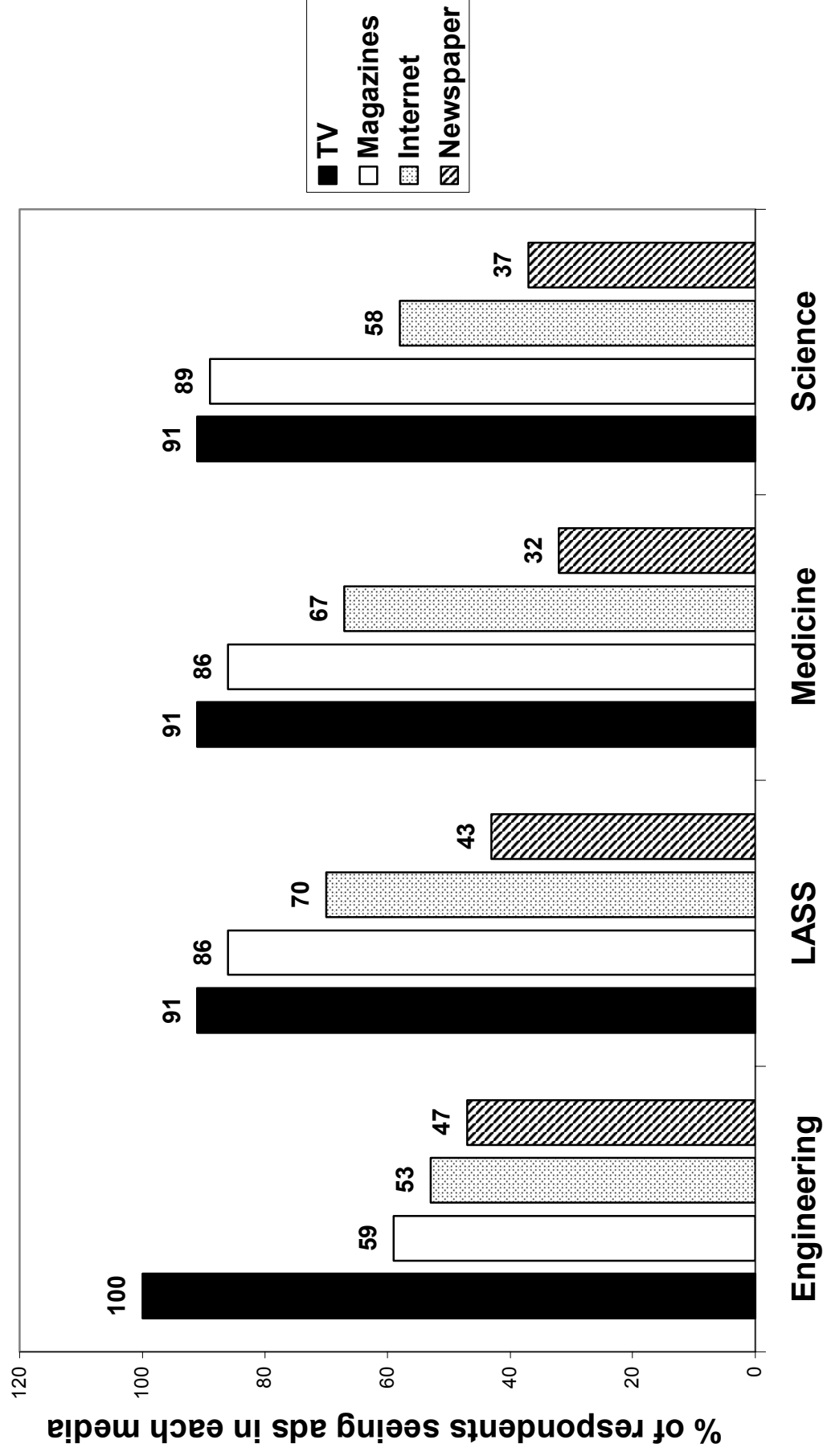
Table 54: Frequency and percentage of respondents by level of concern encountering weight control advertisements in each media

Source of Media	Level of concern	
	Low concern (n=258)	High concern (n=112)
TV	232 (90%)	103 (92%)
Magazines	220 (85%)	100 (89%)
Internet	158 (61%)	79 (71%)
Newspaper	99 (38%)	48 (43%)

In relation to the effect of courses of study, a majority of respondents in each faculty reported seeing weight control advertisements on television or in magazines. Interestingly, students from the faculty of Engineering reported seeing these adverts in magazines less frequently than students from other faculties (see Figure 33).

In summary, women, respondents with a high body image concern and the younger respondents were most likely to see weight control advertisements in the media, particularly on television and in magazines. However, study courses had only slight effect on seeing these adverts.

Figure 33: Percentage of respondents in each faculty reported seeing advertisements in the Media



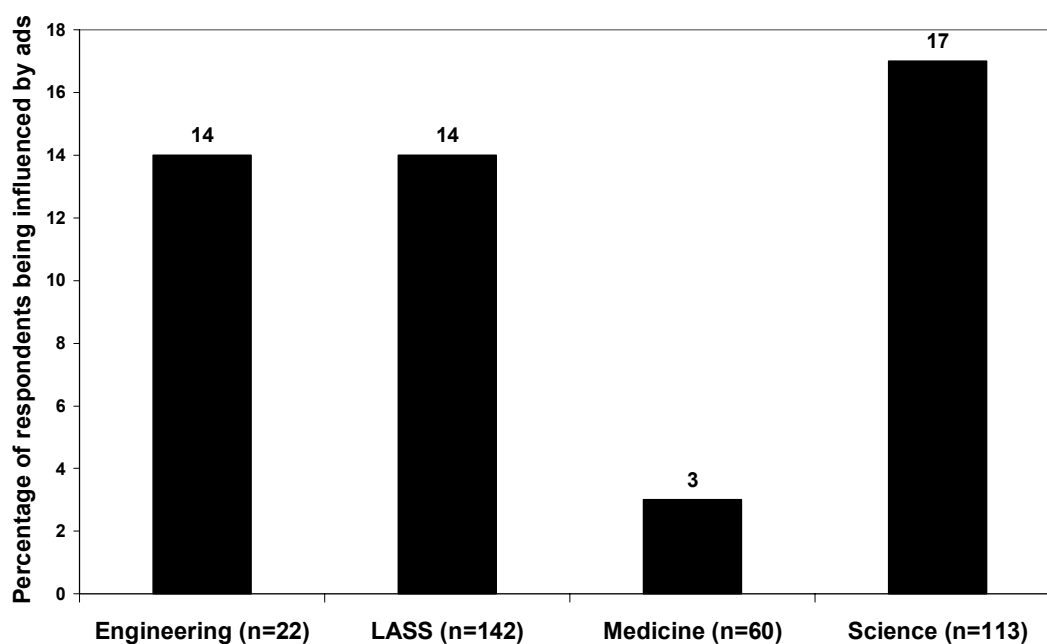
5.2 The effect of advertisements

Fifty-one respondents of a total 389 reported perceiving influence from weight control advertisements about changing weight (13%). Women were more likely to be vulnerable than men to perceive influence from weight control product advertisements in the media (16% of women compared to 7% of men).

In terms of the effect of age, around 13% of respondents aged between 17 and 20 (n=348) reported being influenced by weight control advertisements in comparison with 9% of the respondents in the older age group (n=34). Not surprisingly, students with high body image concern were more likely than those with low body image concern to perceive influence from the advertisements (22% compared to 9%).

Among those who reported being influenced by weight control product advertisements, respondents in the Faculty of Medicine and Health Sciences were less likely to report being influenced by these adverts than students from other faculties (see Figure 34).

Figure 34: Percentage of respondents being influenced by advertisements, sorted by faculty



In summary, the respondents in this study felt they were unlikely to be influenced by weight control product advertisements. However, those who did report being influenced tended to be women, younger and those with a high level of body image concern.

5.3 Types of weight control advertisements

Those who responded that they had seen weight control strategy advertisements before, were then asked to indicate what type of product they had seen advertised. There are six types of weight control advertisements listed in this question, such as diet pills, meal replacement products and sports equipment. In general, the most frequently viewed advertisements were for diet plans and sports equipment, followed by meal replacement products. Moreover, some respondents reported seeing other types of advertisements, and these were for cosmetic surgery, fitness centres, special foods and cosmetic products. Women were more likely to report seeing advertisements for weight loss products such as meal replacement products and beauty products, whereas men reported seeing advertisements for weight gain purposes such as; nutritional supplements and sports equipment (see Table 55).

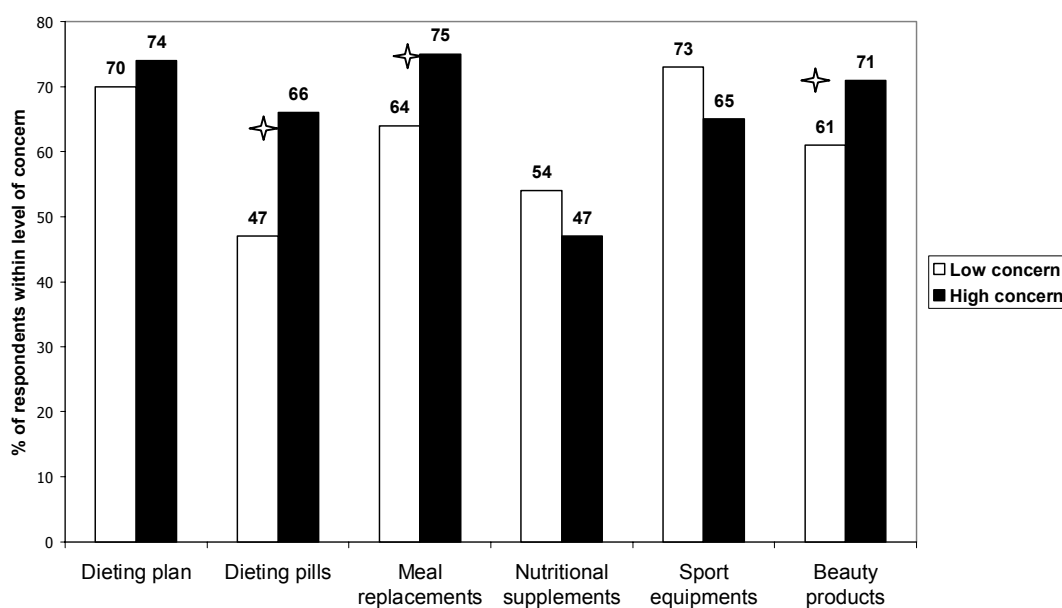
Table 55: Frequency and percentage of respondents seeing each type of weight control advertisement

Types of adverts	Total (n=375)	Men (n=110)	Women (n=265)	χ^2	p
Diet plans	269 (72%)	73 (66%)	196 (74%)	2.214	0.166
Diet pills	197 (53%)	44 (40%)	153 (58%)	9.806	0.002
Meal replacement products	250 (67%)	60 (55%)	190 (72%)	10.292	0.002
Nutritional supplements	193 (52%)	77 (70%)	116 (44%)	21.405	<0.001
Sports equipment	264 (70%)	90 (82%)	174 (66%)	9.739	0.002
Beauty products	239 (64%)	44 (40%)	195 (74%)	37.933	<0.001

When comparing respondents by the level of body image concern, the results show that those who expressed higher levels of concern were more likely to report seeing

weight control advertisements for diet pills, meal-replacement products and beauty products than those with low body image concern, as shown in Figure 35.

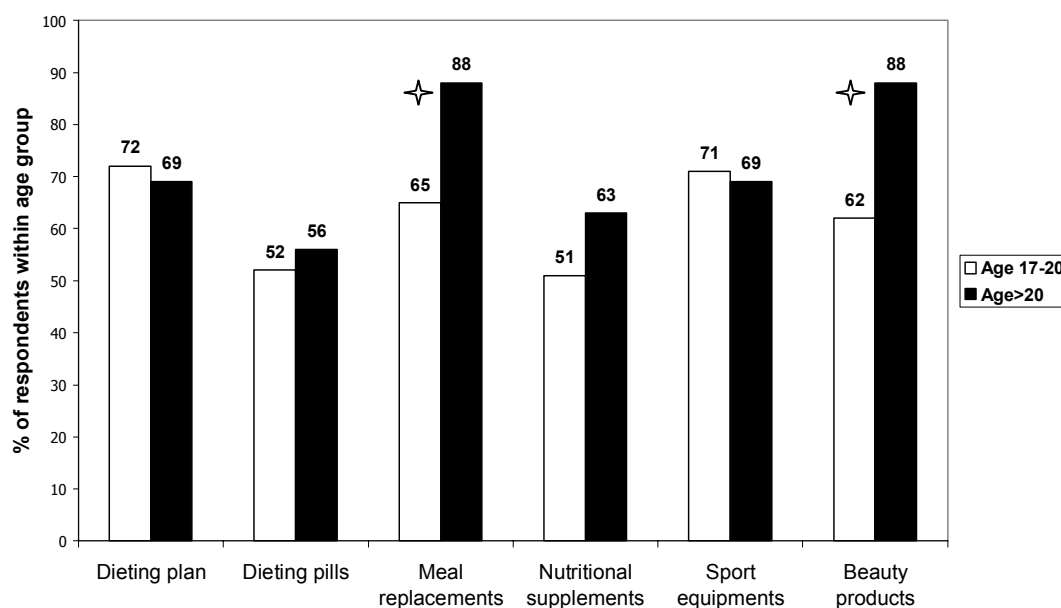
Figure 35: Types of weight control product advertisements results by level of body image concerns



✦ Significant difference, for diet pills $\chi^2=11.514$ $p=0.001$, for meal replacements $\chi^2=4.709$ $p=0.030$, and for beauty products $\chi^2=3.859$ $p=0.049$

In terms of the effect of age, respondents in the younger age group were less likely to see advertisements for meal replacement products and beauty products than the older group as illustrated in Figure 36.

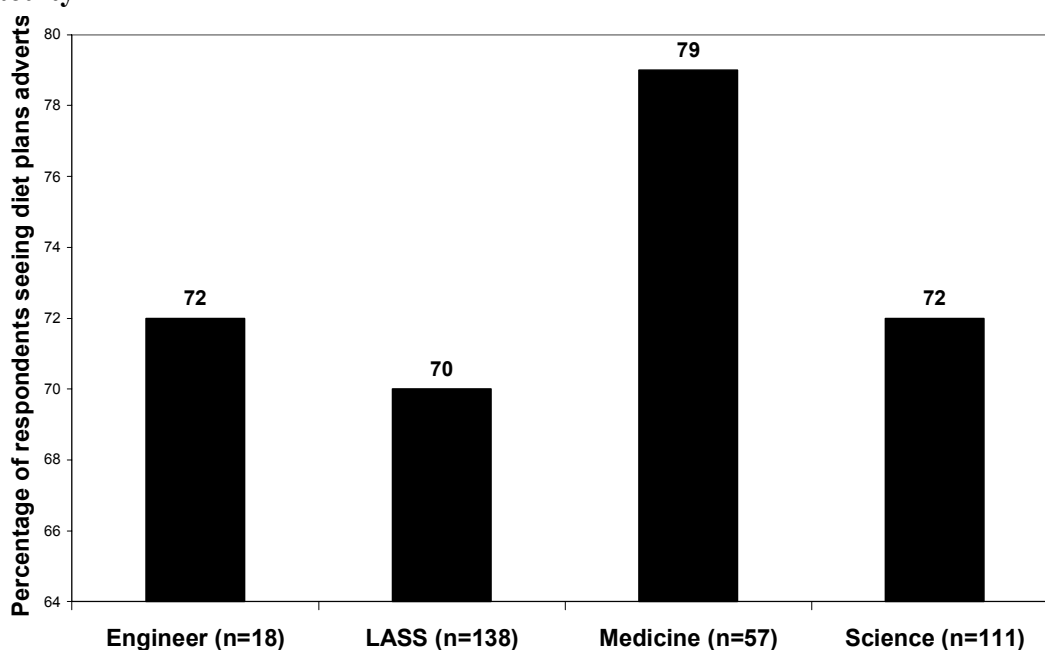
Figure 36: Types of weight control product advertisements results by age group



✦ Significant difference, for meal replacement $\chi^2=6.745$ $p=0.009$ and for beauty products $\chi^2=8.487$ $p=0.004$

In terms of the effect of courses of study, almost 80% of students in the Faculty of Medicine and Health Sciences reported seeing diet plan advertisements as shown in Figure 37.

Figure 37: Percentage of respondents seeing “diet plan” advertisements by faculty



In summary, the results suggest that men tend to notice products related to weight or muscle gain such as sports equipment, whereas advertisements for weight loss strategies such as diet plans and beauty products were more likely to be noticed by women. Moreover, the older respondents and those with a high body image concern were more likely to see advertisements for weight control products.

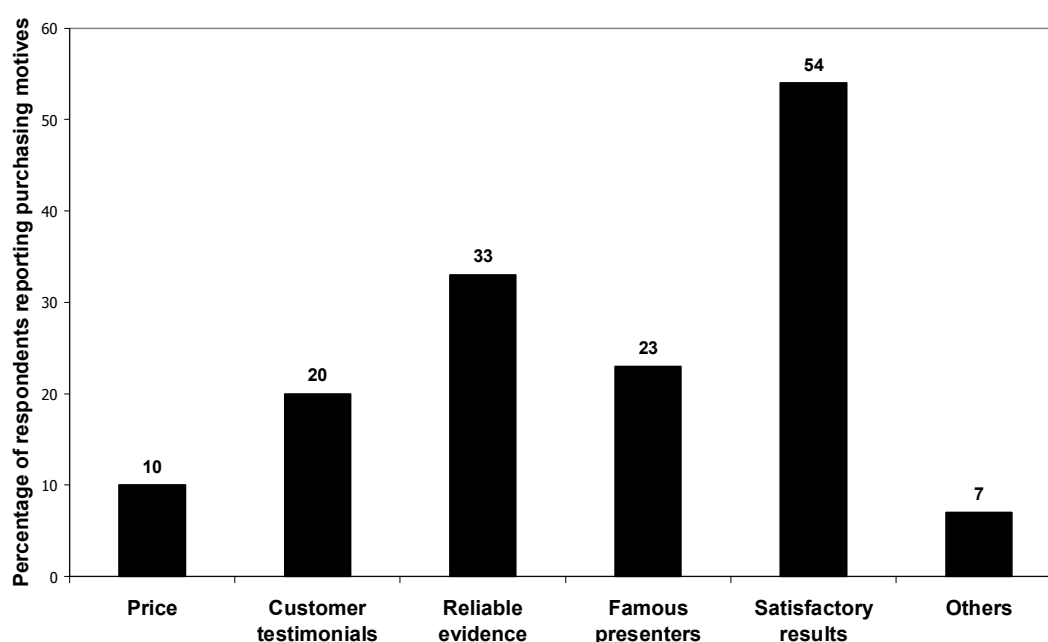
6. Weight control products

This section consists of two sets of questions: reasons for buying weight control products and an evaluation of the quality of these products in terms of their safety, efficacy and the accessibility of information.

6.1 Reasons for purchasing weight control products

In terms of reasons for buying weight control products, respondents were asked “Which are the important reason(s) for them to buy the product?”. The most frequent response in both genders was “*satisfactory results*” (Figure 38). Interestingly, low self-esteem was the most cited of ‘other’ reasons for buying the product.

Figure 38: Purchasing motives of weight control products based on responses



Cross-tabulations of reasons for purchasing weight control products found no differences in motive by gender, age or level of body image concern (Tables 56-8).

Table 56: Reason for purchasing weight control products by gender (percentage within each group)

Reasons	Gender		χ^2	p
	Men (n=106)	Women (n=265)		
Price	8 (8%)	33 (13%)	1.85	0.173
Customer testimonials	19 (18%)	60 (23%)	1.005	0.316
Reliable evidence	39 (37%)	89 (34%)	0.345	0.557
Famous presenters	22 (21%)	68 (26%)	0.992	0.319
Satisfactory results	58 (55%)	155 (59%)	0.441	0.507

Table 57: Reasons for purchasing weight control products by age group (percentage within each group)

Reasons	Age Group		χ^2	p
	17-20 (n=332)	>20 (n=32)		
Price	37 (11%)	3 (9%)	0.093	0.760
Customer testimonials	71 (21%)	7 (22%)	0.004	0.949
Reliable evidence	116 (35%)	10 (31%)	0.176	0.675
Famous presenters	80 (24%)	9 (28%)	0.256	0.613
Satisfactory results	193 (58%)	16 (50%)	0.790	0.374

Table 58: Reasons for purchasing weight control products by level of concern (percentage within each group)

Reasons	Levels of body image concern		χ^2	p
	Low (n=111)	High (n=258)		
Price	24 (9%)	17 (15%)	2.841	0.092
Customer testimonials	58 (23%)	21 (19%)	0.585	0.444
Reliable evidence	90 (35%)	38 (34%)	0.014	0.904
Famous presenters	65 (25%)	25 (23%)	0.300	0.584
Satisfactory results	148 (57%)	63 (57%)	0.012	0.914

In conclusion, weight control products claiming to produce satisfactory results attracted most of the respondents, regardless of gender, age and level of body image concern.

6.2 The use of weight control products

Respondents were asked to evaluate the safety and efficacy of weight control products based on their experiences of using either weight loss or weight gain products. Only a small number of respondents (n=29) responded to this part of the questionnaire. Among those respondents, 16 were women and 13 were men, most were aged 17-20 years. Fourteen women and three men reported using weight loss products, whereas eleven men and one woman had used bodybuilding products. Interestingly, nearly 60% of the respondents with experience of using weight control products had low levels of body image concern.

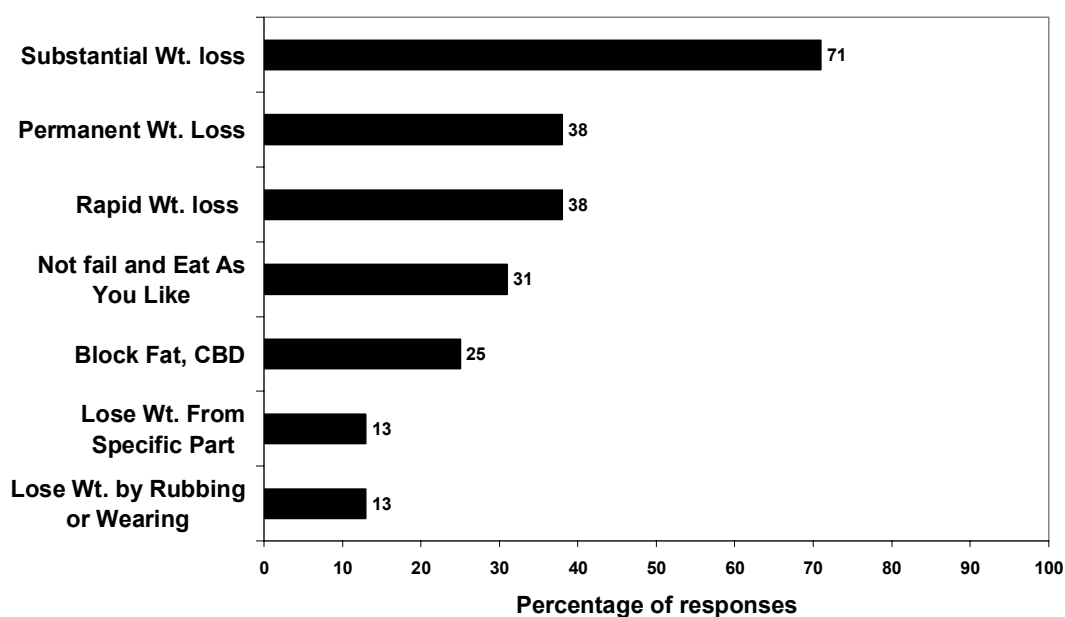
In terms of the efficacy of the products, twenty-six respondents reported that the products they used had the mechanism of action clearly stated on the packaging. Surprisingly, all respondents reported that none of the products they took contained either steroids or ephedra as the main ingredients. Moreover, a majority of the respondents reported receiving all the necessary information in relation to recommended dosage, cost and duration. However, more than 50% of the

respondents stated that most of the products did not have useful information for consumers such as consulting with healthcare professionals and customer warnings.

The majority of respondents reported exercising was the most recommended method for those who want to change weight in conjunction with the use of weight control products, followed by increased protein intakes and increased consumption of vegetables and fruits. In terms of weight control advertisements, the use of consumer testimonials was frequently seen by the respondents, followed by the presentation of scientific evidence and results from rigorous trials.

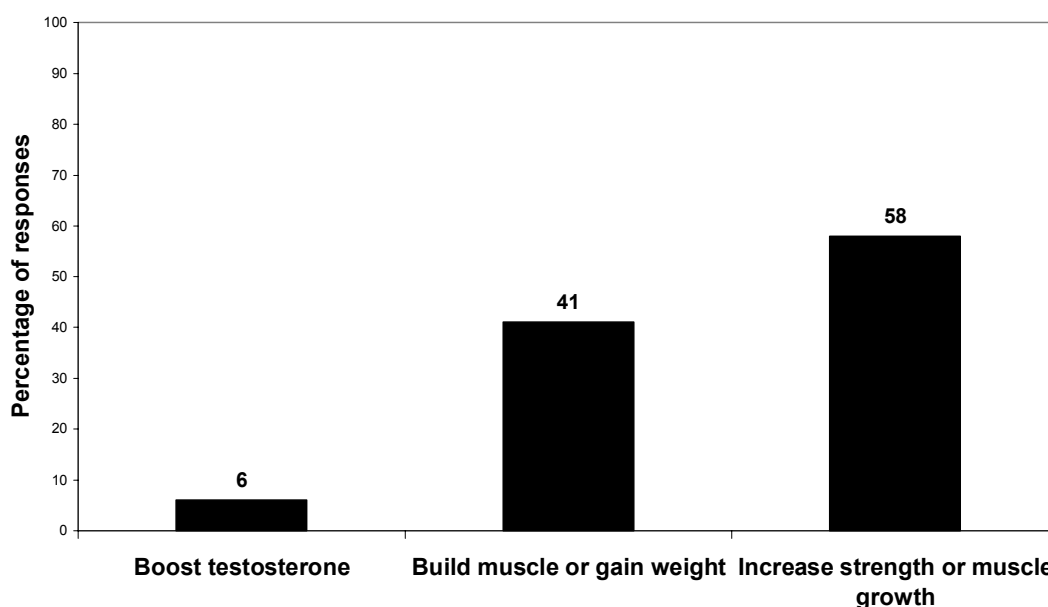
Substantial weight loss was the most often reported product claim for weight loss products, followed by permanent weight loss and rapid weight loss (Figure 39).

Figure 39: Weight loss products' claims reported by respondents



On the other hand, those who had used weight gain products reported that most products claimed to increase strength or muscle growth (Figure 40).

Figure 40: Weight gain products' claims reported by respondents



In summary, most of the weight control products used by the respondents provided useful information, including the purported mode of action, the recommended lifestyle changes and the instructions for using the products. However, there were some major issues that need to be considered, such as the lack of customer warnings and the use of misleading claims.

7. Summary of findings

There are several interesting points arising from the survey of body image views and influences among young adults as follows:

1. The respondents comprised of 276 women and 117 men, mostly aged between 18 to 19 years.
2. Gender and level of body image concern had a greater effect on most of the variables measured, compared with the effects of age groups and course of study.
3. Over two-thirds of women wanted to be slimmer than they actually were, while 38% of men rated themselves smaller than their body ideal and around one-third wanted to be thin.
4. Abdomen was the body part that respondents of both genders were most dissatisfied with.
5. Women reported more concern about their bodies (38% of women vs. 10% of men) and were more highly involved in weight loss behaviours than men (70% of women vs. 40% of men).
6. High level of body image concern was positively correlated with the self-perception of being overweight and a high prevalence of trying to change weight.
7. A combination of dieting and exercise was commonly used among the respondents of both genders (65% of women and 57% of men).
8. Men were more likely than women to report achieving and maintaining their weight change.
9. The media had a greater impact on body image concern than family and friends in both men and women, particularly in terms of the internalization of the ideal body image.
10. Women reported perceiving influence from their mothers, whereas influence from fathers was associated with men's body image concern.
11. The respondents reported perceiving influence from their peers by means of friends' concerns about body image and friends' talks.
12. Television was the major source of weight control product advertisements, followed by magazines.

13. Only a small number of respondents (13%) reported being influenced by these adverts.
14. Satisfactory results were the most cited reason for purchasing weight control products.
15. Most of the weight control product users reported receiving useful information with the product. However, they also found that some products were associated with misleading claims and did not provide consumer warnings.

Part 2: Interview study

Regarding the proposal for the study, the researcher planned to recruit thirty students from the School of Pharmacy, Business school and School of Engineering at the University of Nottingham. However, only twenty first-year undergraduate students (16 from the School of Pharmacy and 4 from the Business school) voluntarily took part in this study. Of those, sixteen were women and four were men. When categorising students in relation to their country of origin, ten were home students (British) and ten were international students from Asian countries, including Malaysia, China and Vietnam. Each participant was asked about their attitudes towards body image and the effects of sociocultural factors as well as their opinions on weight control product advertisements.

A constant comparison analysis showed that there were eight major themes emerging from the results as follows:

1. Body image attitudes
2. Experiences of trying to lose or gain weight
3. Reasons for changing weight
4. Attitudes towards some specific weight loss strategies
5. Perceived influences on body image concern
6. The influence from sociocultural factors: - The media, family and friends
7. Sources of weight change information
8. Experiences of weight change strategies

These will be discussed in turn.

1. Body image Attitudes

With regard to this issue, interviewees were asked about their attitudes towards body image and the areas of the body that they would like to change. Two themes were defined as follows:

1.1 Body satisfaction

In general, most participants of both genders reported being satisfied with body image:

“I’m quite happy with the way I look. I don’t really feel anything needs to change or anything. I’m quite happy about that.” (P14, woman)

“I really don’t care but I feel OK. I feel like kind of confidence. That’s ok.” (P03, man)

However, over half of them complained about some parts of the body that they want to change as illustrated by these quotes:

“I’m OK, I don’t worry about myself too much. ... But obviously there is a few things I would change but I think everybody is like that, aren’t they.” (P04, woman)

“I think generally, I’m satisfied but I feel I could have done better. I mean I would like to improve, like, I would like to lose some weight and look better and it’s also, like, you will be healthier.” (P02, woman)

Only a few female students did not define clearly whether they were satisfied with their body shape or not:

“Um, I don’t know. ... Not too bad, I don’t know. ... kind of rate myself as kind of average really.” (P09, woman)

The study shows that most participants of both genders are happy with their bodies as a whole. Concerns about specific body parts are evident in this body satisfaction sub-theme, which links to the further sub-theme of dissatisfaction with a specific body area.

1.2 Body areas dissatisfaction

In relation to body dissatisfaction, the results showed that four of the female participants raised concern about their body image and wished to change some parts of their body. The areas of the body these women were most dissatisfied with varied

from arms, abdomen, legs and thighs. Additionally, some of them complained about their height, hands and teeth:

“Um, waist and upper thighs” (P15, woman)

“I want to be taller definitely. I want to have more straight legs because my leg is not really nice. It’s a big and thick and I don’t like it. I want to have small legs, long legs. Oh that’s what I want. But I think I want to have a thicker hair, I want to have nicer hands or lots of things. But the thing I want the most is I want to be taller.” (B01, woman)

Moreover, about one-third said they wanted to lose weight:

“Yeah, probably I’m a bit pear-shape so I wish I wasn’t pear shape. So probably like that. And ... lose a bit of weight.” (P09, woman)

Interestingly, only one male student would like to change some parts of his body, as he put it:

“Suppose could be better, I think. There are a few things that I will change. ..., I want a new skin because of the spots, I don’t like my nose, and I probably want to be a bit more toned, I suppose.” (P01, man)

2. Experiences of trying to lose or gain weight

Depending on whether participants had tried to lose or gain weight, they were then asked about the method(s) they currently use or had used in the past. The answers can be grouped into those who tried to lose weight and those who tried to gain muscle or weight.

2.1 Attempts at dieting and losing weight

This issue was predominantly discussed by the young women. Ten out of sixteen women said that they had tried at least one method of losing weight. The most commonly used methods were exercise, eating healthy and balanced food as well as reducing food intake. For example:

“Um, I’ve never had diet pills and anything like that. I’ve been on a diet before or done more exercise. Just generally watch what should I eat more.” (P06, woman)

“I try to do some exercises, and I try not to eat too late because you don’t have time to digest all your food. And I try to eat breakfast. I try to eat like three meals a day on the right time but I don’t try to reduce you know my fat food or anything like that. Because I think you need fat food and you need vegetables that balance though not to get rid of them.” (B01, woman)

Surprisingly, only one girl mentioned the use of weight loss products:

“Yeah, I have tried taking some tablets. But it doesn’t actually work. ... And also I tried, like, it’s some kind of lotion to put on your skin. I think it will remove cellulite. ...” (P02, woman)

Out of all these methods, the healthy methods of losing weight were the most popular among the participants. Only one woman had tried a weight loss product.

2.2 Experiences of muscle gain

It was not surprising that this topic occurred only with the men. Two participants stated that they had attempted to gain more muscle at least once. As far as weight gain methods were concerned, one male student mentioned using protein supplements:

“Er, I have tried protein shakes just to make sure it worked. But I don’t, because at that time I wasn’t trained enough so it turned to fat, that’s what I didn’t want so I stopped that.” (P13, man)

However, engaging in physical activities and controlling dietary intake were the most mentioned methods used by men:

“Yeah, sometimes I am. I go jogging. I haven’t joined the gym or anything. I do at my own exercise at my own time if I can be bothered. I try to eat well as well. I don’t try to have too much fatty food and all that.” (P01, man)

According to the experience of the participants, most of the young women had tried at least one method to lose weight, whereas attempts at gain weight were prevalent in men. In order to achieving their goals, eating sensibly and exercising were the most frequently cited methods among young adults.

3. Reasons for changing weight

Improving appearance was the main reason cited by the participants who had tried to lose weight, as one woman said:

“I think, like, in the summer, like, you don’t wear as many clothes as well and going on holiday as well, like wearing the costumes on the beach...”
(P06, woman)

Interestingly, one woman stated that exercising would compensate for her normal eating, as she said:

“... the reason that I want to do exercise is because I don’t want to eat less. I want to eat as much as I eat as usual. That’s why I’m doing exercise. You are going to lose your fat but you can still keep eating.” (B01, woman)

One female student cited that good health was the main reason for losing weight:

“Oh, reason, it’s probably to keep fit so you don’t really get sick very easily.” (P10, woman)

One woman believed that losing weight would increase her self-confidence:

“...I really want to feel how it actually felt to have high self-esteem and not feel so conscious about how you look when you are talking to people, so then that actually motivated me. ...” (P02, woman)

The results indicate that “appearance” is the main motivator for weight change among the participants.

4. Attitudes towards some specific weight loss strategies

When interviewees were asked about their opinion towards weight control products and some fad diets such as the Atkins[™], which was particularly popular at the time of interview, when this diet was heavily promoted in the media. Most participants raised some concerns about the safety of a long-term use of this diet. For example:

“I think it was for a short time but I don’t think it was for long-term diet. I think it’s not good for yourself. I think it wasn’t very healthy at all. I mean it’s ok for a short time.” (P13, man)

“Well, it does seem to work, doesn’t it. And I watched the documentary about Dr. Atkins, they can’t actually explain why it works, so that’s a bit. I think that was I mean it makes you cut one food source totally out of your diet, probably not good for you especially something like carbohydrate. So I don’t particularly agree with it and I can’t see why people do it for that quick weight loss. But they do say it makes you feel ill, so that can not be good for you even you are losing weight and stuff like that.” (P04, woman)

“... diet products, like, they normally just make you to go to toilet, since when you eat, didn’t they. It’s more like laxative thing. ...” (P06, woman)

“Last time there was something happened in Singapore. There is slimming pill that actually had side effects like damaging liver, something like that. So I think it’s not good taking slimming pill because it does slim you down but it has side effects as well....” (P08, woman)

The findings indicate that the majority of respondents have negative feelings towards weight loss pills and fad diets, particularly their effects on human health.

5. Perceived influences on body image concern

With reference to the factors influencing body image concern, a number of influences were frequently referred to such as body shape awareness, the media, and parents.

The results showed that self-motivation was cited as the main influence on changing body shape among the participants of both genders. For example:

“Not really, that thing is probably my own decision but I suppose there are always still pressures ... I just want to be healthier and make sure that I don’t turn to be really fat.” (P01, man)

“Um, I think it’s just for myself probably and to find some clothes, if I could. Because I feel very good when I look better.” (P11, woman)

“I don’t know. There is nothing, it’s about me thinking about it. There is no bother than that. No, nothing can influence me from outside to diet because I even don’t like that. I think it’s unhealthy because I do a pharmacy degree, I know and I’ve been reading about it so I know it’s unhealthy. There is nothing that can influence me to do it other than me thinking about it.” (P03, man)

Surprisingly, one male cited that participating in the army influenced him to gain more muscle, as he said:

“Basically, army to get bigger, you need to get more physically fit, you need to have more muscle and stuff like that and train more. So army is the main influence.” (P13, man)

The findings illustrate that self-consciousness about body image is the main reason for the interviewees attempting to change the way they look. However, the roles of the media, family and friends need to be further clarified especially in terms of their impacts on young adults’ attempts to change weight.

6. Influences from sociocultural factors: - The media, family and friends

6.1 Media influences on body image

This issue can be classified into the effects of the perfect body images of celebrity culture and the impact of weight control product advertisements.

6.1.1 The influences of celebrities

The results showed that most participants preferred shapely female celebrities, whereas they favoured male celebrities who had both talent and good appearance as can be seen from these quotes:

“Both of them like Cat Deeley is really beautiful and I like the way she looks. And Enrique Iglesias is good-looking as well and I think I like his songs as well.” (P03, man)

“... Um, I suppose like Jennifer Lopez in a way or, like, Halle Barry cos they’re kind of more, like, they’re actually got like figure or so. ...” (P14, woman)

“... Well I guess, um, female would be Jennifer Lopez, she has quite nice body. Yeah, and I think Brad Pitt has a nice body as well.” (P08, woman)

It has been found that the unattainable ideal body image depicted in the media may have a great impact on the development of body dissatisfaction, especially in younger age group. The results indicated that a majority of the participants were influenced by the perfect body images of celebrities, as typified by the following quotes:

“... I do believe that they are sort of, like, set the targets for everybody to achieve in the way they do. Because you see them quite often, you see them on TV or you see them in movie and you, like, oh they’re so special. I wish I had a body like that. You know, that kind of thing. I think it does influence to a certain extent...” (P10, woman)

“No, like, when I look at a male celebrity, I look at his body and it, like, makes me want to do some sports or do some improvement but not want to change completely into him.” (P05, man)

“Yeah, cos it’s like pressure to look like the celebrities. Cos you’ve never really seen like overweight people presenting.” (P06, woman)

Moreover, most participants believed that the media was a major influence among young people.

“... Obviously, the media, there are lots of influences: glamorous celebrities. People want to be like the celebrities so they want to lose weight. Or, like the guys, they want to be more muscular or to look more attractive to women or whatever. ...” (P01, men)

Due to the media promote the body ideal of slimness and muscularity for women and men, as a result an increasing number of both genders reported being dissatisfied

with their bodies and trying to achieve those ideals. However, only five young women agreed that models they saw in magazines had a perfect body which they wanted to be like, while most of them described those models as too thin and unattractive. For example:

“ ... a lot of them are too skinny, ... I say they have like nice figures but some of them, they’re kind of like too ... and it’s not attractive.” (P14, woman)

“No, they are too way too thin, they are too flat.” (P12, woman)

Some female participants reported that they were not influenced by idealised media images, even though they felt that these images were attractive as can be seen in these views:

“I do agree that they have perfect body image but they don’t affect me and then I mean they are celebrities, they should have good body shape so sometimes I read in the magazine wow they’re so great, their body shape. It doesn’t really affect me.” (P12, woman)

“Um, I don’t know. I don’t want to be like them. I think some of them have very good shape as well. So I think I don’t want to be like them.” (P07, woman)

Interestingly, some young women also commented that most models only look good in the magazines:

“Um, well they may seem very perfect in magazine but sometime you read the articles where they have the interview and they said like actually they don’t look that perfect ...” (P10, woman)

Moreover, there were differences in the pressure felt to look like these ideal body images between home and international students. The results showed that most international students were less likely than home students to conform to these images.

As one home male student said:

“Er, possibly when you see people big, oh yeah I like to be like that.” (P13, man)

In comparison with international female students:

“Um, ... no matter how I change, so I can’t be like that.” (P15, woman)

“I adore them [models] sometimes. But for me, maybe I’m too realistic so I think they are beautiful, part of you know, like, because they are all in pictures. ...” (B01, woman)

“Yeah, I just admire them and I think ok they look nice and they got nice body shape but I wouldn’t want to be like them.” (P08, woman)

Cultural and ethnic differences are suggested to explain this effect as one female international student observed:

“May be, there might be a possibility because may be back in my home country, you know more people and you are more conscious of how you look like, especially, like, people opposite sex, like, girls want to attract guy and guy want to attract girls. So they want to have themselves look perfect in front of everyone so that’s why they go on diet. ...” (P08, woman)

In summary, most participants idolised good-looking celebrities. However, shapely female celebrities were viewed as more attractive than skinny fashion models. It should be noted that the international students were not as affected by Westernised media images, in comparison with home students.

6.1.2 Weight control products’ advertisements

The example pictures of weight control product websites were shown to all participants. The questions regarding possible sources of information and advertisements for weight control strategies and their attitudes towards those advertisements were addressed.

Addressing the first question, most participants reported seeing this type of advertisements on the Internet via pop-up windows or junk mail, while some had seen them in magazines, newspapers, on television or even in the gym.

“I think when I log in some websites, those advertisements are automatically turned on so I think I saw but I haven’t noticed any of them before.” (B01, woman)

“Sometimes in the back of Sunday magazine or newspaper, you will get things, like, claiming tablets for lose weight but I don’t really read it. You see the picture before and after one.” (B02, woman)

“Yeah, I’ve seen it in the magazine. It wasn’t magazine; it was a book catalogue or product catalogue.” (P03, man)

“Um, when I go to the gym, like, there are lots of advertisements about kind of products, I never care about it.” (P05, man)

With regard to the influence of advertisements, almost all of them stated that those advertisements did not attract them to try the products and also that they did not believe in the claimed results. For example:

“No actually, because in my country there is some kind of tea. People said that if you are drinking this tea, you are going to lose weight quite quickly. But also I read some articles from newspaper which showed that it’s not true. It’s just made you don’t like to eat anymore and you don’t taste.”
(B01, woman)

“No, it doesn’t look realistic, I wouldn’t test it.” (B03, woman)

“No, it didn’t interest me at all. It didn’t make any difference. I just read for information and that’s it.” (P03, man)

“Not for the Internet one, no. If I was gonna go, I will go to the proper shop, pharmacy or health shop and ask them, rather than doing it on the Internet”
(P13, man)

“No because if it really did work, then they probably cost a lot more and everyone would be skinny, wouldn’t they. And they probably be available in NHS, if that’s great so I don’t believe it.” (B02, man)

However some female participants tended to be more positive about these advertisements:

“Yeah, as long as it’s not too complicated to look at.” (B05, woman)

“I think it depends if they have a lot of like the consumer experiences that they can lose lots and the other thing, it depends on the price. I think those two are the most important one.” (B04, woman)

The results show that the ubiquity of the idealised body image throughout the media could lead to body image distortion, particularly for female home students. On the other hand, weight control product advertisements were viewed as unreliable and deceptive.

6.2 Parental influences

A majority of the participants believed that their own parents had less impact in terms of changing their bodies. However, they perceived that parents had more influence by way of giving support or being a role model for a healthy lifestyle as can be seen from these quotes:

“ ... She just tries to encourage me to eat healthier food. Because if you eat healthier food, you will have healthier body and she also said that you know it's good if you lose some weight, so you will look better and healthier.”
(P02, woman)

“My parents, I don't know about other people parents but my parents have never ever told me to put on a diet. They're telling me to eat more ... and my dad always says I should play more sport but he doesn't mean I have to lose weight.” (B03, woman)

“I think so. I think but it's not that my mum said that stuffs to me but it's just that she's healthy, she always eats healthily and she always been really slim. ... She never really had put any too much weight during pregnancy either. I think that's the main influence really because when you see those parents aren't healthy, you see just the way they cook and eat the same foods. So, it's going to be like they don't eat healthy both parents themselves and they themselves.” (P09, woman)

“My mother, she will try to advise me but not give me stress or push.”
(P11, woman)

It should be noted that most participants thought that parents generally have an influence over their children's body image. For example:

“Yeah, I suppose they do really. I suppose it depends on what your mum and dad are like. Like they could be really like healthy or fat themselves, so then, you know, they probably wouldn't influence their kids about much at all, cos it wouldn't matter. ... I suppose some people must support their parents, they are striving for a skinny family or whatever, so I suppose that could be quite an influence definitely. So I suppose it varies from family to family definitely....” (P04, woman)

Only three women and one man stated that parents had the most influence on pursuing weight change as can be seen in this quote:

“Um, I don't know if, say my mom told me I'd put on a lot of weight or something, then ... probably I would actually do something about it.”
(B02, woman)

On the other hand, in the view of some participants, parents had no influence on engaging in weight control behaviours:

“Parents, actually I don't think that parents will have that big influence on their child.” (P15, woman)

“I would think a lot of parents would try to discourage their children because they want their children to be happy with themselves rather than try to change. That what I would think my parents will be like ...” (P01, man)

The results show that parents are considered to have a supportive role in pursuing a healthy lifestyle rather than encouraging their children to control their weight.

6.3 Peer pressure

In order to investigate the influence of friends on body image concern, the participants were asked about the contents of conversation among their friends regarding weight and shape issues.

With reference to friends' conversations, genders responded differently. While most conversations among women were involved with the methods of losing or controlling weight, young males' friends mostly talked about their ideal body shape and different types of exercises as can be seen in these quotes:

"Oh yeah, I heard them say ... I think I got a few [friends] taking weight loss pills and some of them just don't eat that much but they do lots of exercise, just burn off the fat. ..." (P08, woman)

"Um, we always talk about how to lose weight, keep on diet, try to keep together but just keeping like that but not very much." (P12, woman)

"Like what exercise that they do in a gym, that sort of thing ... Whereas girls or female friends probably talk about how much they should be eating, stuffs that they shouldn't eat, stuffs like pizza and stuffs that they should be eating and try to be careful of what they eat, whereas male, they don't really care how much they eat." (P13, man)

"Like I want to gain more muscle to look like Brad Pitt or some muscular man" (P05, man)

However, about half of them said that they were not interested in those issues and rarely talked about them:

"Um, it's not something that bothered me that much. We don't really talk about it that much." (P07, woman)

"Actually I will just listen but I won't care for it." (P11, woman)

"I try to avoid it because I'm not interested in it. So generally they know that, so they don't talk about it." (P03, man)

On the other hand, some participants referred to weight and shape as interesting topics to talk about as can be seen in these quotes:

"I'm very interested in talking with them because this is one of my favourite topics, just to see how to lose weight." (P12, woman)

"I find it quite interesting. You know they can share their experiences and my experiences as well so we exchange information and we laugh about how we lose weight and put on weight again. So it is kind of fun. ..." (P02, woman)

Only three women reported perceiving pressure to be thin from their friends, as one woman said:

"Um, I have to admit I think it's what people think of you ..., so you want to avoid those negative comments coming at you. Yeah, I think that's it. Really I guess it's peer pressure." (P10, woman)

Interestingly, some participants believed that peer pressure had an impact on their friends to change the way they looked. For example:

"... They do compare themselves with their other friends. I think the most influential thing in my opinion is when they see their friends who were thinner than they are. So they have a complex about dieting and stuff. ..." (P03, man)

"Peer pressure, like, if their friends like are thinner, they want to lose weight. ... and also to be able to attract a boyfriend or girlfriend might be another reason to lose weight. So, you didn't feel that they would get a boyfriend so they probably want to lose weight." (P01, man)

The results show that talking about weight and shape may not raise any concern about changing body image since most participants describe these topics as ordinary and uninteresting.

7. Sources of weight change information

This theme aimed to investigate how young adults seek information about losing weight or gaining muscle. Printed media, for example, magazines and newspapers, was frequently cited among most participants of both genders as can be seen from these quotes:

"Yeah, I suppose I just read on the magazine or in the newspaper really." (P06, woman)

"From magazines, I never looked on the Internet. I think magazines, like, the source that are quite reliable." (P05, man)

However, searching through other media sources, like television and the Internet, to seek the available options and weight loss strategies was also mentioned by some young women:

“I would say the Internet because, like, first of all you want to find out side effects and anything so may be it’s easy to find ... ” (P10, woman)

“I don’t know I think probably the first place that you look now probably is on the Internet ... ” (P09, woman)

Interestingly, only a small number of participants intended to seek advice and opinions from healthcare professionals or gym instructors before using these products. For instance:

“I probably ask my friend. I don’t know how particular use the Internet or not. If I was really serious about doing it, then I probably go to doctor. ... ” (P04, woman)

“I thought the best place. I thought was that if I’m going to the gym or talking to instructor or something like that, and they will just know it like the back of their hands. That’s if I was actually to find out what it was, I just want to go to somebody like that, somebody who’ve been in the field, or like within the bodybuilding or things like that. ... ” (P03, man)

“... just seek medical advice or advice from pharmacy” (P13, man)

Interestingly, one international woman said that she would go to a particular place for seeking advice about losing weight:

“Back in my home country, there is a shop that helps people, that they have organised their slimming programme. There is a shop, like, you can, like, just go in, just walk in and then they will give you a programme, like, where you can put, like, rub some crème or you take some pills and they have organised to tell you how to lose weight. ” (P08, woman)

As far as the Internet was concerned, for the majority of participants Google™ was the most frequently used search engine. To be more specific, I asked, *“What keywords they would use to find information about weight control products?”*. *“Weight loss”* was the most common word used by female participants. However some of them also mentioned keywords such as *“Diet plan”*, *“Weight loss pills”*, *“Slimming products”*, *“Dieting pills”*, and *“Weight loss programmes”*, which might specifically link to their initial aims. Phrases like *“Lose weight products”*, *“Protein supplements”*, and *“Muscle gain”* were cited by young men.

The results indicate that the Internet was not the first place to look for information about weight control products. Moreover, the participants tend to believe information published in the printed media rather than information obtained online.

8. Experiences of weight change strategies

According to the answers of the participants, they had acquired experience about losing or gaining weight from the attempts of their friends or family members.

8.1 Experience from family members

Most participants said that they had experience of family members trying to change weight or shape:

"Yeah, I think my mum and dad, they're based on a diet at the moment ..."
(P06, woman)

"Yeah, my mum and my auntie. I think all the older women tried to [lose weight]." (B02, man)

When asked about the methods they were using to control their weight, exercising regularly and eating healthily were most mentioned. For instance:

"[They] just go to the gym, keep them active. You know just keep physically active rather than just not doing anything at all. That was not specifically to lose weight or gain weight." (P13, man)

However, some participants had experience of family members trying to lose weight by using different approaches such as taking dieting products, joining weight loss programmes or undergoing cosmetic surgery. For example:

"My grandma did [The AtkinsTM Diet] actually. Um, because she got arthritis in the knee and she tried out diet and she did try that one but it didn't last her very long ..." (P09, woman)

"Yeah, actually I think my mum did and she had like not that you know she's just slim and my two sisters, well one of them had like disease [Anorexia] ... The other sister sometimes, [she said] I should really cut down all snacking or something but it's not like in the bad way ..." (P14, woman)

"My mum she went to surgery for something, like, fat suction or something like that, she looked more beautiful then." (P05, man)

"My sister did [use a weight loss product] once. She tried to lose weight so she used the one like a herbal." (P01, man)

8.2 Experience from friends

The findings showed that friends' attempts to change weight were commonly cited among the participants. This can be seen in terms of using weight control products or changing their eating habits. The two most mentioned methods were to control the amount of carbohydrate intake (The AtkinsTM Diet), and to use very-low-calorie-diet products (SlimfastTM). For instance:

"Yeah, there is one girl who on the SlimfastTM but this one was at school and I don't think they lasted it very long ..." (B03, woman)

"I think one of my friend did [The AtkinsTM Diet] as well and it didn't last very long because it's not very nice." (P09, woman)

"Yeah, a few and I think if they did try [weight gain product] a lot and it does work and you can notice it within a couple of months. Probably six months you can see it, they're probably bigger because they've been training." (P13, man)

Overall, the participants had experience of friends and their family members who had tried to change their body weight and shape. However it is not clear whether this information can affect their thoughts about being on a diet or gaining muscle.

9. Summary of key findings

Overall, the majority of participants reported being satisfied with the way they looked. However, the female participants raised some concerns about areas of the body that they would like to change. The results clearly show that women were more likely to attempt to lose weight, while men aimed to gaining weight or muscle. However, participants of both genders stated that improving their appearance was the main reason for altering body image rather than being influenced by idealised media images. Weight control products and fad diets were viewed negatively regarding their harmful effects on health. Peers and parents were perceived as having less influence on attempts to change body shape. Finally, the participants indicated that the Internet was seen as an unreliable source of information about weight change, in comparison with the printed media.

DISCUSSION

1. Summary of the findings

The findings from both the qualitative and quantitative studies indicate that the majority of first year university students felt satisfied with their overall body image. Not surprisingly, women felt more concerned with their bodies (38% of women vs. 10% of men) and were more likely to participate in weight change strategies than men (70% of women vs. 40% of men). Age groups and study courses have only a slight effect on body image perception and body image investment. However, the study illustrates that greater body image discrepancy was strongly correlated with high body image concern. In terms of weight change strategies, most respondents (65% of women and 57% of men) reported using a combination of diet and exercise for weight change. The media was viewed as a major influence on the standard of the ideal body image, while improving appearance was cited as the main motivation for engaging in weight change behaviours. Moreover, the results show that the internalization of the ideal body image was highly associated with a high level of body image concern. However, this effect is less among international students, compared to home students. Finally, weight change product advertisements featuring in magazines and on the Internet had less influence on young adults' attempts to change weight (16% of women and 7% of men).

2. Strengths and limitations of the study

This is the only UK study using a combination of qualitative and quantitative methods to investigate body image issues among university students in the UK. The interview results confirming the findings from the questionnaire study in several areas, and this may enhance the generalisability of the results for the university population and reassure as to the reliability and validity of the interviews.

A number of processes were conducted in order to enhance the credibility of the interview study including the interview process, the selection of participants, data processing and analysis. For the interview process, the interview schedule used in this study was tested and amended before conducting the actual study in order to ensure that the questions in the interview guideline were understandable and covered the areas in each topic as much as possible. The interviews allowed the researcher to

investigate the general issues surrounding body image such as; the influences on body image change and the effect of celebrities on attaining ideal media images. Moreover, the researcher strictly followed the guidelines for conducting qualitative study including conducting the interviews based on the responses of the participants rather than the interview guideline and asking follow-up questions to clarify ambiguous answers. In terms of the selection of participants, students were selected from two different schools to reflect variety of views about body image across different courses of study. In terms of data analysis, the researcher compared the results emerging from the study with the findings from the survey and other related studies in addition to the use of constant comparison analysis. Finally, in order to ensure the dependability of the results, all the transcripts in the interviews were cross-checked and amended by other two researchers.

The questionnaire study combined a number of body image measurements and self-developed questions to examine all the major components of body image, which include perceptual, affective, cognitive and behavioural aspects. The body image assessments include body image satisfaction question for examining individuals' feelings towards their own bodies, the use of the Figure-rating scale (FRS) for measuring body image perception, an adapted version of the Body Shape Questionnaire (BSQ) for measuring levels of body image concern, and study of the prevalence of using weight control behaviours for examining body image investment.

The adapted version of the BSQ used in this study produced similar results to the original BSQ and confirmed that this adapted shorten version of the BSQ can be used when examining the levels of body image concern among young adults. The major advantages of an adapted version are that it is less time-consuming and can be used for both men and women. The adapted version of SATAQ showed high internal consistency in both male and female versions. The major strength of this tool is the ability to examine the media's influence among men, given that the original version was developed for female use only. This study also includes several useful tools for assessing body image issues such as; a five-point Likert scale for evaluating how the participants feel about their own body image, ranging from extremely satisfied to extremely dissatisfied. The main advantages of this assessment are efficiency and the adaptability [334]. Moreover, a series of questions were developed for investigating

the effects of weight control product advertisements as part of the examination of the impact of the media on body image perception. For measuring the effects of friends and parents, several measurements such as the McKnight Risk Factor Survey-III and the “*friend relations and perceived attitudes*” questionnaire were adapted and tested for internal consistency. These adapted measurements exhibited high internal consistency, and are very useful for measuring peers and parental effects among young adults and adolescents.

In terms of the respondents’ characteristics, the sample for the questionnaire study was drawn from a variety of student populations in the University, unlike most studies in student populations which used participants from psychology courses [8, 55, 56]. Whilst the interview study used mainly pharmacy students, they were a mix of home and international students which allowed insight into the cultural and societal influences. However, it should be noted that both of these groups contained students from a variety of ethnic groups.

There are several limitations to this study that should be discussed. The first limitation is the demographic information of the respondents. Since the survey did not include questions regarding Body Mass Index, ethnicity and socioeconomic status, thus it was not possible to consider the influence of these factors which could potentially affect the results. The method of questionnaire distribution means that it was not possible to determine if respondents are representative of the potential respondents. However, respondents to the questionnaire contained more women and were from a limited range of courses of study compared with Nottingham University students. The response rate is low however the distribution method meant that reminders to non-respondents were not possible and younger people, particularly men, tend to be low responders to surveys [335, 336]. Moreover, this might be due to the fact that the questionnaire used in this study is considerably long and required considerable amount of time and effort from the students to complete it.

In analysis this data, a number of bivariate tests were performed to investigate differences in body image across demographic variables. Given that a significance level of 5% was chosen, this means that 1 in 20 of the results obtained may be incorrect, in particular false positive differences. It should also be noted that some

associations may be due to confounding, that is a condition in which the association between two variables may have been caused by another variable which may have resulted in an overestimation or an underestimation of the association. For example, the apparent low prevalence of trying to change weight in students from Faculty of Engineering may have resulted from the fact that most of the students in this faculty were men, and men were less likely to report engaging in weight change behaviours than women. Therefore, the prevalence of trying to change weight may be associated with gender rather than course of study.

Although the validity and reliability of the questionnaire was tested, a pilot study was not performed and therefore questions may have been misunderstood or poorly completed resulting in erroneous data analysis and interpretation. For the interview study, the major limitations were the small number of men who took part and the lack of diversity in course of study. Due to the difficulties in recruiting students from the School of Engineering and Business School, most participants were from the School of Pharmacy and the majority were female. Finally, social desirability bias may have affected both the questionnaire and interviews. Evidence suggests that some research respondents may answer the questions in terms of socially desirable responses rather than describe what they actually think or do, which could potentially affect the interpretation and the meaning of the results [109].

In terms of sampling bias (the selection of a sample that is not representative of the general population), it should be noted that the results from this study may not be generalisable to young adult populations. This may be due to the fact that this particular group of students may be atypical of young adult populations as they are considered to have high self-esteem, may come from affluent families and to receive high quality education, all of which might contribute to reducing the external validity of the findings as can be seen in terms of the low level of body dissatisfaction and the low prevalence of using weight control products.

Response bias (a bias where survey respondents differ from non-respondents) may also have affected the findings in this study as respondents were more likely to be women than men. This may have resulted in an overestimation of the overall findings due to the higher percentage of women amongst the respondents compared with the

Nottingham University population. The differing responses from the schools surveyed may also mean that our sample is not typical of the Nottingham University population with higher responses from the School of Pharmacy. However, what is not known is the influence of course of study on body image.

Regarding the interview study, although the results may have reached saturation, this may not ensure that the results were credible due to qualitative data being subjective and open to change regarding individual's interpretation. Therefore, in order to enhance the credibility and dependability of the data, the researcher might need to consider re-entering the field, purposively sampling participants from different courses of study in order to ensure that there are no new emerging themes. Moreover, in order to substantiate the findings, the researcher might need to consider using other techniques such as attempting to argue a contradictory case from the data.

3. Comparison with other related studies

The results from the current study are consistent with other studies in several respects. The average age of respondents in this study is 19 years old, which is similar to that in other body image studies of young adults [21, 50, 52, 207]. This might be very useful when comparing our results with other studies, as it has been suggested that body image issues are age-sensitive. In this study although one-third of students reported body dissatisfaction, this is considerably lower than studies among US college students, in which around 57-85% of women and 38-60% of men reported being dissatisfied with their bodies [8, 52, 62]. Moreover, the results on body image concern are similar to a Canadian study by Morry and Staska [21] showing that the male university students reported being unconcerned about body image, whereas women reported being slightly concerned about body image. These gender differences might be due to the fact that levels of body image dissatisfaction reach their peak during the adolescent period, as a result of pubertal development, with girls on average reaching puberty at an earlier age [6]. Additionally, two US studies [52, 53] found that over 80% of female college students reported being dissatisfied with their body image as a result of weight gain during adolescence.

The results for body part dissatisfaction in both interview and questionnaire studies confirm a number of studies of young adults in the UK, US and Australia [3, 9, 55, 57, 67] which show that lower body parts are rated as the most unsatisfactory body part among women, whereas upper body parts are the most dissatisfactory body part among men [17]. These findings were also similar to the results from studies in both adolescents [42] and children [33].

According to the theories related to body image, the findings support the self-discrepancy theory showing that greater discrepancy between the perceived current and the ideal body image predicts a high level of body image concern among college women [17]. A number of studies of children [29, 31], adolescents [35, 38, 39] and adults of all ages [9, 50, 51, 57, 62, 63] found that women perceived themselves to be heavier and chose a thinner ideal body shape, while men were more likely to try to gain weight or muscle. The results only supported the findings among women since there was only a small difference between the perceived current and the ideal body image among men, and this has also been reported in other studies [8, 56, 60]. Moreover, this study was congruent with numerous studies of young adults [54, 56, 103] and adolescents [39, 40], which showed that men's body dissatisfaction can be spilt equally into those who wanted to lose weight and those who wanted to gain weight or muscle. The results support several studies of young adults [8, 52, 206] and adolescents [43-45] that self-perception of being overweight was associated with the attempt to lose weight, particularly women. Moreover, the results confirm other studies of adolescents [42] and young adults [8, 17, 52] in showing that there was a positive correlation between self-perception of being overweight and a high level of women's body dissatisfaction.

Not surprisingly, the results confirmed a study by Lowery et al. [50] showing that high body image concern was more prevalent among women than men. Moreover, as reported in Prevos's study [8], the current study found that respondents with high body image concern were more likely to have a greater positive body image discrepancy and to engage in weight change behaviours. It has been suggested that the discrepancy between the current and the ideal body image is caused by the internalization of the thin body ideal, whereas engaging in weight loss behaviour is driven by dissatisfaction with weight [6].

Regarding factors affecting body image concern, the results support the proposed model which was adapted from a study of adolescents by Ricciardelli and McCabe [133] and a study in young girls by Blowers et al. [134]. The authors concluded that sociocultural influences (friends, family and the media) have an impact on body image concern among adolescents of both genders. In contrast to the first study, the current study shows that only the media strongly affects men's body image concern. It should be noted that a number of issues need to be taken into account when making a comparison to these two studies. Firstly, in the first study, the authors proposed their model for the factors that influenced adolescents to engage in weight change strategies rather than the factors that affected body image concern. Secondly, there are differences in terms of the questionnaire used in their studies and the current study. As the first study used the Sociocultural Influences on Body Image and Body Change Questionnaire, whereas the current study used the adapted version of SATAQ for assessing the media's influence and self-developed questions for measuring parental and peer influences. Finally, the literature suggests that peers and parents play an important role in body image concern among adolescents and children, however this might have a lesser effect on young adults who are living away from the parental home.

Despite the fact that the Westernised thin body ideal is becoming more pervasive all over the world, this study suggest that most international students are not influenced by such ideals. Differences in the ideal body image have been shown across different ethnic groups [90], it has been suggested that these Westernised ideals may not affect some ethnic groups [90, 98] or some ethnic groups may focus less on bodily appearance and emphasise other personal characteristics [100]. However, this study did not examine the effect of ethnicity, so it is very difficult to discuss exactly why a thin body ideal has less influence on this particular group of students. This might have been a result of their cultural background or their different priorities. It may be that these international students may come from more affluent families or that they may pay more attention to their studies than to body image issues compared to home students. However, a number of studies have shown that ethnicity can lessen the effect of the media in several ways such as the strong racial identity in African American society and the traditional values of Asian people [87, 101, 102].

Several studies in the US found that in comparison with white women, black women reported less body dissatisfaction [87, 88], were less influenced by the thin body ideal [90, 91] and chose a slightly heavier ideal body shape [66]. In terms of the effect of the media, the interview results showed similarities with both UK and US studies of adolescents across ethnic groups which showed that white adolescents were more likely to be influenced by the Westernised-ideal body image than other ethnic groups, even those with higher levels of body image concern [90, 99-101]. The interviews found similar differences in home compared with international students, although ethnic group data was not collected. Abrams and Stromer [90] have suggested that ethnicity and culture also play an important role in terms of the influence of Westernised media images [204]. In terms of the ideal body shape, our study supports a study by Grogan [3] which also found that women described “*shapely celebrities*” as having the most preferable body shape, whereas skinny models were seen as being unattractive and too thin.

In terms of the experience of trying to change weight, it is not surprising that our study has found results similar to those reported in several studies across all ages showing that women were more likely to have experience of trying to change weight than men (70% of women vs. 40% of men) [3, 43, 86, 201, 203, 204]. The results support other US studies which also found that dieting and exercise were the most commonly used method for weight change among young adults in both genders (65% of women and 57% of men) [51, 52, 202, 205]. Similar results have also been found in a number of studies of children [29, 31] and adolescents [43, 45, 88, 212, 214, 215]. In particular, the results showed that women were more likely to choose dieting as a method for weight loss, whereas exercising was the method most frequently used by men, which is supported by studies of adolescents [43, 44] and adults [59].

Regarding the reason for changing weight, our study was congruent with several studies showing that improving personal appearance is the main reason for changing weight and shape [23, 29, 75, 197]. The interview study also reveals that self-motivation is cited as the main influence on body image concern, as similar to a study by Grogan [3]. Despite the fact that “*satisfactory results*” were cited as the main reason for trying weight control products among students, increased level of

self-esteem was the most frequently mentioned incentive in the list of other reasons, which had also been highlighted in a study by Furnham and Greaves [9]. In contrast with the findings from a study by Bendixen et al. [225], which showed that dietary changes were reported as the most successful method for weight loss achievement and maintenance, among this group of university students exercising was reported as the most successful method of weight change, followed by a combination of dieting and exercise. However, weight change methods were reported as having slightly effect on weight loss maintenance. When comparing the prevalence of unhealthy weight change methods in the US and the UK, this study found a lower incidence of using either dieting pills or steroid products (7% of the respondents) [54, 203, 206-208, 210, 211]. Moreover, most women did not believe in fad diets as they described them as being ineffective and dangerous in the long-term, which is consistent with Grogan's study [3]. In terms of sources of information about weight change, only the results from the interview study support an online survey's claim [254] that the Internet was the most popular source of information. This may in part be due to the questions, as there was not a question concerning the source of information about weight change only a question asking about weight control product advertisements in the media. However, these findings from the interview study contradict the results from the questionnaire study, which imply that magazines or television could still play an important role in transmitting the ideal body image and weight change information.

In terms of parental influence, the results confirm a number of studies in that pressure to be thin and encouragement to lose weight from parents were associated with negative feelings towards their bodies [7, 104, 115]. The findings support other studies with regard to the influence of parents, particularly mothers, on daughters' concerns about body image, regardless of the age of respondents [28, 110, 111, 113, 115]. It is not clear whether parents have a positive or negative effect on men's body image perception. However, the results support numerous studies [37, 110, 117-119], which have suggested that only the influence of fathers had an effect on body image concern for men and weight gain strategies. This may be due to the fact that men in this study may receive positive comments from their mothers, which could then protect them from feelings of body dissatisfaction. According to the social learning

theory, it has been shown that parents are the major influence affecting body image among children, however, this effect declines with increasing age [337].

When making comparisons between parents and peers, this study confirmed that peers had a greater influence on body image than parents [204]. This study confirmed the findings of a number of studies across all ages [57, 77, 116, 126] that there is a positive relationship between peer influences and level of body image concern in both men and women. Similar to studies of Australian adolescents [118, 120], this study showed that females are more likely to perceive influence from peers than males. There are several mechanisms explaining the influence of friends on body image concern. The findings support previous studies [57, 119-124] showing that friends can have both direct and indirect effect on body image concern in both genders, but particularly among women in terms of friends as a source of influence (peer modelling), friends' concerns about body image, friends' talks and pressure from friends to be thin. Moreover, our results confirmed the findings from a study by Stice, Maxfield and Wells [126] in that respondents with a high level of body image concern were more likely to perceive influence from friends than those with a low level of concern.

In terms of the impact of the media, the results from the interview study were consistent with a number of studies which suggested that the media is the main influence on the standard of the ideal body image among women [3, 8, 338]. The results support a number of studies which used sociocultural theory [22, 100, 105, 154, 155, 162, 169-171] and suggested that the internalization of the cultural body ideal is associated with body image concern. However, this should be treated with caution as our study did not aim to investigate the effect of the media through social comparison theory.

4. Implications of the study

The results of this study provide a better understanding of body image issues among university students in the UK in terms of level of body image concern and body dissatisfaction, the prevalence of using weight control strategies and factors influencing body image concern and the use of weight control products. This could be potentially beneficial to healthcare professionals in order to provide an appropriate advice and consultations as well as developing body image intervention for university populations, as evidence suggests that some interventions to tackle body image concerns are very practical among college-age women [6].

It also should be noted that the prevalence of body image dissatisfaction among women may not be as high as has been suggested in other studies. However, almost one-third of the students felt dissatisfied with their bodies. Whilst it appears that the problems are not as large as in other countries, this still affects a considerable proportion of young adults. It has been suggested that body dissatisfaction could damage both physical and mental health [6]. More alarmingly, this problem could lead to the development of eating disorders later on in life. Therefore if this problem can be detected in the early stages, it could prevent individuals suffering from body image dissatisfaction during adolescence or young adulthood.

Moreover, body image problems are not limited to women. Evidence suggests that the prevalence of men's concern about body image is increasing. It has been found that men who are overly concerned about being muscular could develop serious conditions such as muscle dysmorphia. As a result, healthcare professionals and clinical psychologists need to be aware and understand the causes of this problem.

The findings from the media's influence indicate that the internalization of the ideal body image has a larger impact on level of body image concern than the awareness. Therefore, in order to tackle the cause of this problem, healthcare professionals need to examine the level of internalization among their clients and develop a specific intervention to minimise the impact on body image concern.

It should be noted that most studies of body image have been conducted with Caucasian populations. The current research shows that people across different ethnic groups may perceive their body image and its influences differently, thus treatments or interventions for these specific groups of people need to be more selective.

The media has recently recognised the danger of transmitting images of the skinny fashion models to young people as head of the British Fashion Council claimed that there will not be any size zero models on the catwalk in the London Fashion Week [339]. However, this will not guarantee that young people will not see these images somewhere else such as on television, in the adults' magazines and on the Internet. Therefore, the next suggested measures are to ban models who are extremely thin from appearing in the media as well as increasing the TV programmes, and articles in magazines and newspaper that aim to educate young people of the dangers of being too thin and to promote healthy lifestyles.

Moreover, parents and schools can help to promote positive body images among children and young adolescents in terms of the images, views and language they use. There is also a need to increase awareness of skinny children and detection of the early signs of eating disorders, alongside encouragement to engage in a healthy lifestyle. Most importantly perhaps, both parents and teachers should also act as role models for young people.

Finally, the results from the current study found that peers might also have an influence on body image concern among young adults. Therefore, in order to promote a positive body image effectively, peers also need to be part of the intervention to tackle body image problem, particularly the younger age group.

5. Further studies

Future studies need to examine large, representative samples of different age groups in order to represent the diversity of both students and other young adults in the UK. Especially given that differences between these populations have previously been noted, a US study found that non-student populations were more likely to use dieting pills than students [203]. This might imply that further study should also investigate the incidence of body image concern and the use of weight control products among non-student populations in the UK.

Moreover, regarding self-discrepancy theory, future studies should measure the discrepancy between the perceived current body image and the ought-self, which defined as the ideal body image expected from others such as parents or partners. This should give a clearer picture of the impact of different domains of self image.

Due to the fact that most studies only examined the influence of parents on body image concern among children, a study that investigates the role of siblings on body image development is needed. Research on the effect of the media on body image perception has mostly been conducted in the US, the UK and Australia – broadening research to other countries, particularly non-Westernised would provide further insight into this important phenomenon. The current study suggests that home and international students had different attitudes towards body images and the media's influence. Further study should investigate the differences between home and international students in a larger sample size. This will give a clearer picture of why people who live abroad differ from those who live in their own country; even they both received the same messages from the media. Furthermore, an international study would be very useful and beneficial for clinical psychologists to examine body image issues in different cultures.

Research evidence shows that ethnicity can play an important role in the development of body image concern. Research specifically investigating this issue could try to determine the different effects of ethnicity and culture on body image and concerns of young adults.

SUMMARY

The results from body image study showed that most university students of both genders reported being satisfied with their bodies. However, women were more likely than men to engage in weight control strategies, especially a combination of dieting and exercising. Improving personal appearance was cited as a main reason to change weight whereas the media, including weight control product advertisements, were viewed as a major source of promotion of the ideal body image. The next chapter will investigate the views of pharmacists on weight management and their involvement in promoting healthy lifestyles in the community.

**13. PART 3: A STUDY OF PHARMACISTS AND THEIR ROLE
IN WEIGHT CONTROL STRATEGIES**

METHODOLOGY

This section will illustrate the rationale for conducting the interviews, the development of the interview guideline, the interview process and data analysis.

1. Rationale for interview use

The aim of this study was to determine the role of pharmacists in weight management, thus qualitative interviews were used. This technique enabled the researcher to explore pharmacists' views on implementing weight management services and weight control products, and this is advantageous given the lack of research in this area. Further, it allowed the researcher to investigate several perspectives of pharmacists in terms of tackling the obesity problems and promoting a healthy lifestyle.

2. Developing the interview schedule

The interview schedule was devised based on the literature and results from student surveys and interviews. It was comprised of three parts: views on weight control strategies, advice and interventions for overweight patients and strategies for tackling obesity and promoting a healthy lifestyle (Appendix 12). The first set of questions was about pharmacists' attitudes towards implementing weight management services, weight control products and popular diets such as the AtkinsTM and GI diets. In the second part, pharmacists were asked about their involvement in helping customers who want to lose weight in terms of advice, consultation or services. Lastly, questions about plans or strategies for tackling obesity and promoting healthy lifestyles were included in the final part of the interview schedule.

3. Recruitment of the participants

A list of community pharmacies in the Nottingham City Primary Care Trust was retrieved from the NHS website [340]. From a total of fifty-six pharmacies registered within Nottingham City, twenty pharmacies were randomly chosen from different socio-economic status areas according to the Nottingham City Council survey [341]. However, due to a poor response after the first mailing, another twenty pharmacies were randomly selected. A letter of invitation and an information sheet were sent to

the pharmacy manager in each pharmacy. After receiving the letter, pharmacists were not required to respond. Instead, they were told in the invitation letter that after one week there would be a follow-up telephone call from the researcher in order to ask whether they were willing to take part in this study or not and, if so, to arrange a convenient date and time for interview.

4. The interview process

Before commencing the interview, the study was explained to each participant and they were then asked to sign two copies of the consent form, one copy for themselves and another for the research records. Each interview took between half and one hour and was recorded on audiotape.

The main body of the interview asked community pharmacists to express their opinions about the implementation of weight management services and the availability of weight control strategies and to examine their contributions for promoting healthy lifestyles and tackling obesity.

5. Credibility and dependability of the study

As mentioned in chapter 12 section 4, a number of researchers have suggested that credibility and dependability should be used to describe the reliability and validity of qualitative research. This can be achieved by ensuring that all the processes, which include the selection of participants, data collection and data analysis, have been thoroughly conducted [329]. For enhancing the credibility of the data emerging from this study, participants were randomly selected to represent the views of community pharmacists across different socio-economic status areas in the Nottingham city. Although the researcher did not conduct an initial pilot study first, all the questions used in this study had been reviewed by the panels of the Ethics Committee and revised by two other researchers. In terms of data collection, the researcher strictly followed the principles of qualitative methodology such as; conducting the interview by the responses of participants rather than the interview guideline, clarifying ambiguous answers by asking follow-up questions or discussing other interesting points that might arise from the interview. This will help to ascertain that the data obtained from the interview is accurate and reflects the perspectives of community

pharmacists. Finally, to ensure the dependability of the findings that the data has been correctly interpreted and analysed, all the transcriptions were cross-checked by the other two researchers.

6. Data analysis

Tapes from the interviews were transcribed verbatim. All the transcriptions were analysed in terms of themes emerging from the interview and using a constant comparison method to identify common and contrasting views, as described for the student study (Chapter 12 section 6). All the emerging themes were then presented by using quotes from the interview transcriptions.

In relation to this study, the researcher developed the interview schedule for conducting the study with pharmacists. It consisted of three main topics: Pharmacists' views about weight control strategies, pharmacists' advice on weight control strategies and strategies for tackling obesity and promoting healthy lifestyles. The analysis of the interview transcripts was performed by selecting the common and contrasting quotes and grouping them to represent each theme.

RESULTS

Eight pharmacists (5 women and 3 men), from a total of 40 pharmacists within the Nottingham city area, agreed to take part in the interview study. The characteristics of the participating pharmacies are described in Table 57. Each participant was asked about their attitudes towards weight management services and their opinions on tackling obesity in the pharmacy.

Table 59: Characteristics of the pharmacies

Type of pharmacy (n=8)	Large multiple	6
	Small to medium multiple	2
	Independent	0
Location of pharmacy (n=8)	High-income area	1
	Moderate-income area	2
	Low-income area	5

1. Opinions about weight management services

According to the New Pharmacy Contract, pharmacists are expected to provide services for public health promotion, including tackling obesity. When pharmacists were asked for their opinions about operating weight management services in pharmacies, half of the pharmacists responded positively to the idea of implementing a weight management service in their community pharmacy. They believed that pharmacists are in an ideal position to provide such services to the community as can be seen in the following quotes:

“Yeah, I think it’s a ideal role for pharmacist to be involved in such a service because, you know, weight management, it’s a long term for things for like cardiovascular diseases, diabetes, obesity, you know, all those kind of things.” (P6, male)

“I think it’s a good idea, umm, and it’s a fantastic opportunity for pharmacists. It’s a new role that you could become involved in, you know, PGD. Yeah, I’m really thrilled with it.” (P8, female)

However, two of them disagreed with the idea of implementing these services in the pharmacy, as they did not recognise the role of pharmacists in weight management.

“I don’t think it’ll probably work that well. I think it’s quite like the deal with asthma treatment and nicotine replacement. I think it’s a more than a five minute chat, something’s bigger than that. That’s my opinion, so not convinced but potential.” (P1, male)

Pharmacists were then asked to identify the barriers to operating weight management services. These included time constraints, limited facilities, difficulties in approaching the right people, absence of remuneration and a perceived lack of training.

“Um, yes along with a lot of things we do at the moment. I think it’s fine in principle and idea but it’s very difficult in practice because we are too busy doing another things.” (P5, female)

“At the moment we are not targeting the right people, you know, to get people to lose weight because we haven’t got weight management services itself. Um, but sometimes it’s difficult to try to get people you know to follow us on a certain diet and I think weight management it is a very sensitive subject so you know it’s difficult to tell people. You know, like, to increase your physical activity, like, to lose weight, well you know you would think it’s a common sense. ...” (P6, male)

Unsurprisingly, only a few pharmacists perceived benefits in establishing weight management services in community pharmacies, which could result from several identified barriers, as can be seen from this quote:

“I think it is a limited number of people that would find a benefit from it. But I think it’s definitely some. Things like ... “Weight Watchers[®]”, where you pay a subscription and go. Parts of the benefits of that, is actually discussion with other people and going on a regular basis. Obviously, if there’s something that they’re providing free of charge, where they get some support. Yeah, I think it would help some people. ...” (P5, female)

Following on from the last theme, some pharmacists suggested that these services should not be managed in pharmacies and some thought that if the barriers were overcome, they would agree to do it:

“If they were paid, it was done, and it was written down and pharmacists were credited after they had done a course, then yes.” (P4, male)

Moreover, one pharmacist thought that these services would be beneficial, if patients became more involved, as can be seen in this quote:

“I think it would be useful and it would help but I don’t think it’s a sole answer. I think that everybody knows at the first stop, five portions of fruit and veg a day and do some exercises and eat properly not eat fat and starch. But everybody mostly they don’t exercise, don’t eat fruit and veg and eat a lot of potatoes and snacks. That’s what they do.” (P1, male)

2. Views on weight loss strategies

Given the growth of the diet and nutrition markets, pharmacists were asked for their opinions on weight loss products and fad diets such as the Atkins™ Diet, which was very popular at the time of interview and heavily promoted in the media. Four of the pharmacists stated that some weight loss strategies could be beneficial for some people particularly under the supervision of healthcare professionals, as illustrated by these quotes:

“ ... Um, people who need to lose weight, if they’ve got medical conditions like diabetes, heart problems and those people who have tried to lose weight on their own and are having difficulties, where they need to lose weight, you know, they need it for their health, general health, then I would see they used in the controlled diet and supervised as well by people, like, GP, nurses, pharmacists. If they’re supervised and the weight’s controlled, it’s fair enough. And Slimfast™ products, they seem to help people as well, to lose weight. But if it’s the way weight is lost quickly, people have more of a chance to ... gain it back. ...” (P3, female)

“I think if you utilise it correctly, weight loss products something, like, Slimfast™ can work. ... But I think people need a lot of information and also they need a lot of support which is the biggest thing. ...” (P4, male)

On the other hand, two pharmacists dismissed the efficacy claims found in weight control products, for example:

“No, pointless cos they don’t work. If they did, everybody has it but they don’t.” (P1, male)

3. Pharmacists’ involvement in obesity management

It has been suggested that there are several interventions that pharmacists might offer for obese or overweight patients in order to help them lose weight and maintain their new weight. When pharmacists were asked about their contributions to obesity management, most pharmacists had experience of giving advice and information about dieting and exercise, both verbally and through the provision of leaflets. For instance:

“Well, ok we don’t actually have specific weight management plan here in the pharmacy. But what we do is because we do the other services, like, helping people giving up smoking and, you know, like ..., blood pressure test and cholesterol test. Part of that we do, you know, we advise people on losing weight. What we do is, you know, I’ve got that chart band so that’s more, like, I tend to go by telling people what kind of fat to avoid We have, like, leaflets which we could give them. ...” (P6, male)

“... we got a book of self-help groups and if there are people with particular eating problems, we could point them in that direction. You could tell them about slimming club and things like that, if people wanted that sort of health but in a general way. But I would say if it’s more of a really obese person and got a serious health problem, I will refer them to the surgery.” (P7, female)

In terms of weight loss products, most pharmacists were rarely asked for their advice and opinion on these products. Moreover, they believed that the media had a great impact on customers’ purchasing decisions:

“No, they tend to buy them cos they’ve seen the adverts. And if it’s kind of, it doesn’t work, they still buy them.” (P1, male)

“Um, not many. The women that come in, they tend to be women, already have read these things, you know, on the Internet, in the newspaper. And they come in for a specific product, basically just want to know where it is, and they may well then say to us, “does it work or whatever”. ...” (P8, female)

To be more specific, the interviewer then asked what age group were most likely potential buyers of weight loss products belonged to. Middle-aged women were cited as the main target group for using these products:

“ ... I would think middle-aged women. It tended to be sort of women in their 20 to 30s, who’re gonna buy them. I don’t get a lot of young girls coming and asking. ...” (P5, female)

Interestingly, only two pharmacists were responsible for operating weight loss programmes, which involved using Xenical® as well as lifestyle modification as described in this quote:

“As part of our pharmacy weight loss programme, we’ve advised people actually been given Xenical® as part of healthy eating and dieting regime, that’s the whole programme. That’s what we encourage them to do, take the capsules and change their diets and build the next plan when they come off the caps and the way we help them building exercise, it’s really good. ...” (P2, female)

Due to the fact the pharmacists in this study were mostly involved in giving advice and information about weight loss, the interviewer then asked the follow-up question: *“What sort of approach do you think is the most appropriate way to tackle the obesity problem and promote healthy lifestyles?”*. The majority of pharmacists regarded one-to-one consultations as the most practical approach for customers who want to lose weight, compared with participation in discussion groups:

“... if pharmacies have got the areas and facilities to do a session, then definitely that’s a good idea. Possibly to do like one-to-one consultation. The consultation area is the main thing as well cos people are reluctant to speak over the counter when there are staff and another people listening. ...”
(P3, female)

Most pharmacists also suggested that giving advice and information were necessary for promoting a healthy lifestyle. For example:

“I think the only thing they can do is to offer information and provide information to everyone to pick it up and read about it. If we gave everybody a leaflet on it, it might help. ...” (P1, male)

“Um, well I think the first line of advice would be diet advice with or without some products out there. And then, you know, they try these things and fail. I mean we could also, sort of, pin point towards the clubs you know, like, Weight Watchers®, Slimming World® and all that kind of thing. ...”
(P8, female)

DISCUSSION

1. Summary of key findings

The results suggest that only half of the participants viewed weight management services as being practical due to a number of barriers such as: time constraints, the lack of remuneration and difficulties in approaching the right people. Regarding weight control strategies, most pharmacists were aware of the availability of products and services; however, they had a mixture of positive and negative views towards these products. Most participants also felt that pharmacists have the potential to reduce obesity problems in the community, although currently the majority only had a limited involvement in tackling obesity, such as giving advice about dieting and exercise. The two pharmacists who were running weight management clinics were doing it as part of a company-wide initiative and felt positively towards these services.

2. Strengths and limitations of the study

This study is the first UK study to examine the views of community pharmacists about weight management services and weight control products. In order to ensure the credibility of the results, the researcher conducted the study to ensure that all the processes have been thoroughly conducted including the selection of the samples, the interview process and data analysis. For the selection of the participants, pharmacists in this study were randomly selected from different areas within Nottingham city to reflect variations in customer characteristics. In terms of the interview process, despite the fact that this study only presented the results from interviews with eight pharmacists, the study was conducted based on the responses of participants rather than the interview schedule and using follow-up questions to clarify ambiguous answers. Moreover, in terms of data analysis, apart from using constant comparison method, the researcher compared the results from this study with other relevant studies to substantiate the findings of this study. Finally, all the interview transcripts were cross-checked with other two researchers to ensure the dependability has been achieved.

However, it should be noted that due to the difficulty of recruiting participants, only a small number of pharmacists participated in this study and all of those were working in pharmacies belonging to multiples. Therefore, the results cannot be generalised to represent all community pharmacies in the UK, particularly independent pharmacies. Moreover, due to a low number of participants in this study, the results may not yet reach saturation points and this will reduce the credibility of the results. In order to enhance the credibility of the findings, the researcher should consider re-entering the field, purposively sampling pharmacists who work in the independent pharmacies and recruiting more pharmacists from different areas. In terms of data analysis, the researcher only used constant comparison analysis and compared the results with other studies, therefore using other techniques could enhance the credibility of the findings such as deviant case analysis, which would help to investigate contradictory evidence emerging from the data.

3. Comparison with other related studies

These results imply that pharmacists may not yet play an active role in reducing obesity and promoting healthy lifestyles, as highlighted in the Department of Health's plan to improve public health and the new Pharmacy Contract [274, 279]. Furthermore, the pharmacists reported few requests for advice about weight control products which contradicted the findings from a US study showing that pharmacists were frequently asked for advice about weight loss drugs [285]. These findings also support two US studies which suggested that time constraints was one of the most mentioned barriers to implementing weight management services [235, 288]. In contrast to another US study, this study does not suggested that pharmacists are highly involved in consultations about weight loss products and lifestyle modification [285].

4. Implications of the study

Although there are a number of reports showing that the obesity problem in the UK has reached crisis proportions [277], thus far the contribution of pharmacists has been limited. As highlighted in this study, encouragement and support from the local Primary Care Trusts as well as financial recognition are needed to overcome perceived barriers to providing weight management services in community

pharmacies. Moreover, community pharmacists need to be more aware of the potential effectiveness weight control products and problems associated with available popular diets.

5. Further studies

Further studies are needed to examine the views of community pharmacists in different locations and across a wider range of pharmacy types. Future research should investigate to what extent pharmacists are aware of information from the Internet and use that as part of their consultations or advice to customers. An observational study in pharmacies would enable the researcher to investigate further, and in particular to consider obesity related problems within the community.

SUMMARY

The results from the interviews with pharmacists indicated that most pharmacists were not actively involved in weight management and promoting healthy lifestyles. They identified a number of barriers to the provision of services and perceived a lack of benefit to the pharmacy in providing such services.

The next chapter brings together the findings from all three studies and suggests implications for individuals, health professionals and society. Directions for further research are also suggested.

14. SUMMARY OF DISCUSSION

This chapter will highlight the key findings from the three studies: evaluation of weight control websites, body image study in young adults and a study of pharmacists' role in weight management. It will also set out the implications for young adults, healthcare professionals and health policy and suggest areas for further research.

1. Summary of key findings

An evaluation of advertisements for weight control products on the Internet and a short questionnaire for weight control product users indicated that the quality of both weight loss (64%) and weight gain product (80%) information was generally poor due to the use of misleading claims and a lack of product and consumer warnings. Therefore, this might affect consumers' decisions to use these products for losing weight or gaining muscle, particularly those who are well-educated.

Similarly, the results from both interviews and surveys with young adults showed that most participants reported rarely being influenced by weight control product advertisements and hardly considered using weight control products or programmes as a method for changing their weights or bodies. A combination of exercising and dieting were the most commonly used methods for changing weight among this age group. This may be due to the fact that this particular age group are not the main targeted users of these types of products, as the findings from the pharmacists' study indicate that middle-aged women are the most regular buyers and Government campaigns promoting healthy lifestyles may be effective in conveying these messages to this age group.

Although only one-third of university students in this study reported being dissatisfied with their bodies and this is considerably lower than the findings from other US studies, this problem could still affect a considerable number of young adults. This study showed that there were still some particular concerns in both genders. Women were more likely to feel concerned with their bodies (38% of women vs. 10% of men), to engage in weight control strategies (70% of women vs. 40% of men), and to ask for advice about weight loss than men. However, some men

also reported trying to gain weight or muscle, particularly involving in the use of bodybuilding products.

In relation to factors affecting body image concern, this study showed that sociocultural factors (the media, family and friends) may not have a great influence on developing body image concern although they were found to contribute to the development of body dissatisfaction. This was confirmed in the interview where self-motivation was the main influence affecting young adults' thoughts of changing their body image. Moreover, the results from a questionnaire study ascertained that most respondents were unlikely to be influenced by weight control product advertisements and there was only weak to moderate relationship between the sociocultural pressures and body image concern. When those three factors were compared, it was not surprising that the media were the most influential factor for developing body dissatisfaction, particularly the internalization of the ideal body image. Similar to the results from the interview study, most participants believed that the media plays an important role in transmitting the idealised body image to the society.

The results from a pharmacists' study indicate that pharmacists may not be actively involved in reducing obesity problems and promoting healthy lifestyles in the community. This may be due to a number of barriers identified by the pharmacists in this study, such as time and financial constraints, and a lack of perceived benefit to the pharmacies from implementing these services. Moreover, the interview study with young adults showed that pharmacists were rarely mentioned as being the first port of call for obtaining information about weight control.

2. Implications for young adults

Despite the fact that body image may not be considered as the main issue among university students, this study shows that it is not only women who are concerned about body image, men also place a high importance on their shape and body image, which could potentially lead them to be engaged with the use of bodybuilding products. More alarmingly, websites about bodybuilding products often contained misleading information and little advice about consumer warnings. The students in the study seemed to have some awareness of the potential influence of the media and

also the poor quality of information about weight control products, however society need to ensure that young adults have access to information about these issues and know where to seek advice.

Although ethnic group data was not collected from the students participating in the survey study, the findings from the interview study show that culture may have a great effect on determining the ideal body shape between home and international students. The effects of culture and ethnicity should be considered in designing educational material for young adults.

3. Implications for research

The results from an evaluation study of weight control websites showed that both of the evaluation tools can be used to screen the quality of information provided within the websites. This could be potentially beneficial to consumers who intend to use these products, as these tools will help them to learn to evaluate the quality and safety of product information and eventually they can carry out such evaluation without using any tools.

The findings from a body image study showed that body image problems are not limited to women, in particular an increasing number of men were trying to gain weight or muscle. Therefore, questions about gaining weight or muscle need to be included when addressing body image issue among men, apart from questions addressing weight loss behaviours.

Researchers should also be concerned about the effects of culture and ethnicity when conducting surveys about body image issues as these factors might have an impact on perception of their current and ideal body image.

4. Implications for healthcare professionals and health policy

This study provides an insight into body image issues and weight control strategies, which help healthcare professionals to better understand the prevalence of using weight control strategies, especially for weight control products and factors affecting body image. Healthcare professionals need to be aware of misleading information

contained in weight control advertisements, particularly those on the Internet, as this could potentially lead to the misuse of these products, particularly in the younger age groups. Moreover, healthcare professionals should consider body image issues when consulting with young people, as this might help to detect the early signs of eating disorders or body dysmorphic disorder.

In relation to body image interventions, healthcare professionals can help patients with body image problems by examining the causes of their problems, providing caring and non-judgmental advice and building their self-esteem and self-acceptance. As body image is composed of several aspects, a multi-dimensional approach which includes physical, mental and environmental factors is required to tackle this problem. Healthcare professionals should provide information about harmful weight control strategies for example vomiting, using laxatives, diuretics or slimming pills and smoking. They should also be aware of transferring negative messages about body image and weight control to young people such as criticising those who are overweight, overly concerned about certain type of foods, and accepting the glamorisation and normalisation of eating disorders in the society.

Several studies in the US have shown that weight management services in the community pharmacies can help patients to lose weight effectively. However, there is limited evidence in the UK. The results from a pharmacists' study show that there are a number of barriers to operating such services in pharmacies including a lack of financial support and practical training. Therefore policy makers and the local Primary Care Trusts need to recognise and resolve these problems in order to promote these services operating from community pharmacies. Moreover, there is no single solution to resolve these problems and each case should be treated individually depending on the availability of facilities and the average income of populations living in the area a pharmacy serves.

Pharmacists have a great potential in terms of promoting good health to the public and there are several roles for pharmacists to be involved in health promotion. Firstly, pharmacists can help pre-screening patients with eating disorders by observing those who particularly or regularly purchase a large amount of diuretics, laxatives or slimming pills. Secondly, pharmacists can help patients with body image

concern by promoting positive body image campaigns, providing leaflets and signposting them to the relevant organisations or services available. Finally, in terms of advice on body image problems, pharmacists should adapt their interventions to suit people of different age groups. For example, pharmacists may consider using interactive materials or the Internet to educate and advise teenage customers.

Healthcare policy can help in developing positive body images by promoting healthy lifestyles throughout school and beyond, producing materials specifically designed for young adults and increasing awareness of these issues, in particular, the effects of gender, age, ethnicity and culture on body image amongst health and social care professionals.

5. Further research

Further studies should explore body image views and influences among non-student populations, as this will clarify these problems across all young adults in the UK. A study that investigates the effect of ethnicity and culture on body image concern is needed in order to understand how young adults across different cultural and ethnic groups view their own body image and how these factors are related.

An observational study in pharmacies is also suggested in order to determine who purchases weight control products and the influences on purchase, additionally investigate the interventions that pharmacists make with obese or overweight customers.

Finally, the weight control product advertisement evaluation tools should be further tested with consumers and also used to explore the quality of the weight control products available in the pharmacies and health-food stores, and from other media sources by using the evaluation tools to assess quality of product information.

BIBLIOGRAPHY

1. Pokrajac-Bulian A, Zivcic-Becirevic I. Locus of control and self-esteem as correlates of body dissatisfaction in Croatian university students. *European Eating Disorders Review* 2005;13:54-60.
2. DiGiacchino RF, Sargent RG, Topping M. Body dissatisfaction among White and African American male and female college students. *Eat Behav* 2001;2(1):39-50.
3. Grogan S. *Body image: Understanding body dissatisfaction in men, women and children*. London: Routledge, 1999
4. Cash TF, Jakatdar TA, Williams EF. The Body Image Quality of Life Inventory: further validation with college men and women. *Body Image* 2004;1:279-87.
5. Banfield SS, McCabe MP. An evaluation of the construct of body image. *Adolescence* 2002;37(146):373-93.
6. Striegel-Moore RH, Franko DL. Body image issues among girls and women. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guilford Press, 1994:183-91.
7. Croll J. Body image and adolescents. URL http://www.epi.umn.edu/let/pubs/img/adol_ch13.pdf (accessed 13 June 2006).
8. Prevos P. Differences in body image between men and women, 2005. URL http://www.prevos.net/ola/body_image.pdf (accessed 8 May 2006).
9. Furnham A, Greaves N. Gender and locus of control correlates of body image dissatisfaction. *European Journal of Personality* 1994;8:183-200.
10. Scott P. Weight perceptions, dieting behaviors, and perceived satisfaction with life among university students. Proceedings of the 133rd Annual meeting and exposition of American Public Health Association; 2005 December 10-14; Philadelphia, USA.
11. Shih M-Y, Kubo C. Body shape preference and body satisfaction in Taiwanese college students. *Psychiatry Res* 2002;111(2-3):215-28.
12. Myers PN, Biocca FA. The elastic body image: The effect of television advertising and programming on body image distortions in young women. *J Commun* 1992;42(3):108-33.
13. Spitzer BL, Henderson K, Zivian M. Gender differences in population versus media body sizes: A comparison over four decades. *Sex Roles* 1999;40(7-8):567-82.

14. Strickland BR. Internal-external expectancies and health-related behaviors. *J Consult Clin Psychol* 1978;46(6):1192-211.
15. Moretti MM, Wiebe VJ. Self-discrepancy in adolescence: Own and parental standpoints on the self. *Merrill Palmer Q* 1999;45(4):624-49.
16. Veale D. Advances in a cognitive behavioural model of body dysmorphic disorder. *Body Image* 2004;1:113-25.
17. Strauman TJ, Vookles J, Berenstein V, Chaiken S. Self-discrepancies and vulnerability to body dissatisfaction and disordered eating. *J Pers Soc Psychol* 1991;61(6):946-56.
18. Lavine H, Sweeney D, Wagner SH. Depicting women as sex objects in television advertising: Effects on body dissatisfaction. *Pers Soc Psychol Bull* 1999;25(8):1049-58.
19. Cohen SB. Media exposure and the subsequent effects on body dissatisfaction, disordered eating, and drive for thinness: A review of the current research. *Mind Matters: The Wesleyan Journal of Psychology* 2006;1:57-71.
20. Jung J, Lennon SJ. Body image, appearance self-schema, and media images. *Fam Consum Sci Res J* 2003;32(1):27-51.
21. Morry MM, Staska SL. Magazine Exposure: Internalization, Self-Objectification, Eating Attitudes, and Body Satisfaction in Male and Female University Students. *Canadian Journal of Behavioural Science* 2001;33(4):269-79.
22. Murnen SK, Smolak L, Mills JA, Good L. Thin, sexy women and strong, muscular men: Grade-school children's responses to objectified images of women and men. *Sex Roles* 2003;49:427-37.
23. Frost L. *Young women and the body: A feminist sociology*. New York: PALGRAVE, 2001
24. Mckinsky NM. Feminist perspectives and objectified body consciousness. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 1994:55-62.
25. Cash TF. Cognitive-behavioral perspectives on body image. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. London: Guildford Press, 1994:38-46.
26. Rumsey N, Harcourt D. The challenges facing researchers in the area. In: Payne S, Horn S, editors. *The psychology of appearance*. Berkshire: Open University Press, 2005:42-61.

27. Davison KK, Markey CN, Birch LL. A longitudinal examination of patterns in girls' weight concerns and body dissatisfaction from ages 5 to 9 years. *Int J Eat Disord* 2003;33:320-32.
28. Davison KK, Markey CN, Birch LL. Etiology of body dissatisfaction and weight concerns among 5-year-old girls. *Appetite* 2000;35:143-51.
29. Schur EA, Sanders M, Steiner H. Body dissatisfaction and dieting in young children. *Int J Eat Disord* 2000;27:74-82.
30. Kostanski M, Fisher A, Gullone E. Current conceptualisation of body image dissatisfaction: have we got it wrong? *J Child Psychol Psychiatry* 2004;45(7):1317-25.
31. Adams K, Sargent RG, Thompson SH, Richter D, Corwin SJ, Rogan TJ. A study of body weight concerns and weight control practices of 4th and 7th grade adolescents. *Ethn Health* 2000;5(1):79-94.
32. Robinson TN, Chang JY, Haydel KF, Killen JD. Overweight concerns and body dissatisfaction among third-grade children: The impacts of ethnicity and socioeconomic status. *J Pediatr* 2001;138:181-7.
33. Hill AJ, Oliver S, Rogers PJ. Eating in the adult world: The rise of dieting in childhood and adolescence. *Br J Clin Psychol* 1992;31:95-105.
34. Fox KR, Page A, Peters DM, Armstrong N, Kirby B. Dietary restraint and fatness in early adolescent girls and boys. *J Adolesc* 1994;17:149-61.
35. McCabe MP, Ricciardelli LA. Parent, peer, and media influences on body image and strategies to both increase and decrease body size among adolescent boys and girls- Statistical data included. *Adolescence* 2001;36(142):225-40.
36. McCabe MP, Ricciardelli LA. Body image and body change techniques among young adolescent boys. *European Eating Disorders Review* 2001;9:335-47.
37. Ricciardelli LA, McCabe MP, Banfield S. Body image and body change methods in adolescent boys: Role of parents, friends, and the media. *J Psychosom Res* 2000;49:189-97.
38. Cohn LD, Adler NE, Irwin CE, Millstein SG, Kegeles SM. Body-figure preferences in male and female adolescents. *J Abnorm Psychol* 1987;96(3):276-9.
39. Furnham A, Badmin N, Sneade I. Body image dissatisfaction: Gender differences in eating attitudes, self-esteem, and reasons for exercise. *J Psychol* 2002;13(6):581-96.

40. Furnham A, Calnan A. Eating disturbance, self-esteem, reasons for exercising and body weight dissatisfaction in adolescent males. *European Eating Disorders Review* 1998;6:58-72.
41. Champion H, Furnham A. The effect of the media on body satisfaction in adolescent girls. *European Eating Disorders Review* 1999;7:213-28.
42. Davies E, Furnham A. Body satisfaction in adolescent girls. *Br J Med Psychol* 1986;59:279-87.
43. Serdula MK, Collins ME, Williamson DF, Anda RF, Pamuk E, Byers TE. Weight control practices of US adolescents and adults. *Ann Intern Med* 1993;119(7):667-71.
44. Felts WM, Parrillo AV, Chenier T, Dunn P. Adolescents' perceptions of relative weight and self-reported weight-loss activities: Analysis of 1990 YRBS national data. *J Adolesc Health* 1996;18:20-6.
45. Grigg M, Bowman J, Redman S. Disordered eating and unhealthy weight reduction practices among adolescent females. *Prev Med* 1996;25:748-56.
46. O'Dea JA, Rawstorne PR. Male adolescents identify their weight gain practices, reasons for desired weight gain, and sources of weight gain information. *J Am Diet Assoc* 2001;101(1):105-7.
47. Barker ET, Galambos NL. Body dissatisfaction of adolescent girls and boys: Risk and resource factors. *J Early Adolesc* 2003;23(2):141-65.
48. Wardle J, Marsland L. Adolescent concerns about weight and eating; A social-developmental perspective. *J Psychosom Res* 1990;34(4):377-91.
49. George VA, Johnson P. Weight loss behaviors and smoking in college students of diverse ethnicity. *American Journal of Health Behaviors* 2001;25(2):115-24.
50. Lowery SE, Kurpius SER, Befort C, Blanks EH, Sollenberger S, Nicpon MF, et al. Body image, self-esteem, and health-related behaviors among male and female first year college students. *Journal of College Student Development* 2005;46(6):612-23.
51. Wong Y, Chen SL, Chan YC, Wang M, Yamamoto S. Weight satisfaction and dieting practices among college males in Taiwan. *J Am Coll Nutr* 1999;18(3):223-8.
52. Drewnowski A, Yee DK. Men and body image: Are males satisfied with their body weight? *Psychosom Med* 1987;49:626-34.

53. Delene LM, Brogowicz AA. Student healthcare needs, attitudes, and behavior: marketing implications for college health centers. *J Am Coll Health* 1990;38(4):157-64.
54. Olivardia R, Pope HG, Borowiecki JJ, Cohane GH. Biceps and body image: The relationship between muscularity and self-esteem, depression, and eating disorder symptoms. *Psychology of Men and Masculinity* 2004;5(2):112-20.
55. Hoyt WD, Kogan LR. Satisfaction with body image and peer relationships for males and females in a college environment. *Sex Roles* 2001;45(3-4):199-215.
56. Rozin P, Trachtenberg S, Cohen AB. Stability of body image and body image dissatisfaction in American college students over about the last 15 years. *Appetite* 2001;37(3):245-8.
57. Stanford JN, McCabe MP. Body image ideal among males and females: Sociocultural influences and focus on different body parts. *J Health Psychol* 2002;7(6):675-84.
58. Cash TF, Phillips KA, Santos MT, Hrabosky JI. Measuring "negative body image": validation of the Body Image Disturbance Questionnaire in a nonclinical population. *Body Image* 2004;1(4):363-72.
59. McElhone S, Kearney JM, Giachetti I, Zunft H-JF, Martinez JA. Body image perception in relation to recent weight changes and strategies for weight loss in a nationally representative sample in the European Union. *Public Health Nutr* 1999;2(1a):143-51.
60. Leonhard ML, Barry NJ. Body image and obesity: Effects of gender and weight on perceptual measures of body image. *Addict Behav* 1998;23(1):31-4.
61. Halliwell E, Dittmar H. A qualitative investigation of women's and men's body image concerns and their attitudes toward aging. *Sex Roles* 2003;49:675-84.
62. Garner D. The 1997 body image survey result. *Psychol Today* 1997;30(Jan-Feb):30-84.
63. Cachelin FM, Rebeck RM, Chung GH, Pelayo E. Does ethnicity influence body-size preference? A comparison of body image and body size. *Obes Res* 2002;10(3):158-66.
64. Charles N, Kerr M. Food for feminist thought. *Sociol Rev* 1986;34(3):537-71.
65. Furnham A, Boughton J. Eating behaviour and body dissatisfaction among dieters, aerobic exercisers and a control group. *European Eating Disorders Review* 1995;3(1):35-45.

66. Bhuiyan AR, Gustat J, Srinivasan SR, Berenson GS. Differences in body shape representation among young adults from a biracial (Black-White), semirural community. *Am J Epidemiol* 2003;158(8):792-7.
67. Cash TF, Winstead BA, Janda LH. The great American shape-up: body image survey report. *Psychol Today* 1986;20:30-7.
68. Taylor CB, Sharpe T, Shisslak C, Bryson S, Estes LS. Factors associated with weight concerns in adolescent girls. *Int J Eat Disord* 1998;24:31-42.
69. Polce-Lynch M, Myers BJ, Kilmartin CT, Forssmann-Falck R, Kliwer W. Gender and age patterns in emotional expression, body image, and self-esteem: A Qualitative analysis. *Sex Roles* 1998;38:1025-48.
70. Davies E, Furnham A. The dieting and body shape concerns of adolescent females. *J Child Psychol Psychiatry* 1986;27(3):417-28.
71. McCabe MP, Ricciardelli LA. Body image dissatisfaction among males across the lifespan: A review of past literature. *J Psychosom Res* 2004;56(6):675-85.
72. Frost J, McKelvie S. Self-esteem and body satisfaction in male and female elementary school, high school, and university students. *Sex Roles* 2004;51:45-54.
73. Oliveira FPd, Magalhaes ML, Vigario PdS, Vieira RdS. Eating behavior and body image in athletes. *Revista Brasileira de Medicina do Esporte* 2003;9(6):348-56.
74. Langer E. Body image satisfaction: Gender and age differences. URL <http://www.geocities.com/SouthBeach/Shores/6052/bodyimage.html> (accessed 4 June 2006).
75. Kiefer I, Rathmanner T, Kunze M. Eating and dieting differences in men and women. *The Journal of Men's Health & Gender* 2005;2(2):194-201.
76. Smolak L. Body image in children and adolescents: where do we go from here? *Body Image* 2004;1:15-28.
77. Ricciardelli LA, McCabe MP. Children's body image concerns and eating disturbance: A review of the literature. *Clin Psychol Rev* 2001;21(3):325-44.
78. Pesa JA, Syre TR, Jones E. Psychological differences associated with body weight among female adolescents: The importance of body image. *J Adolesc Health* 2000;26:330-7.

79. McCabe MP, Ricciardelli LA. A longitudinal study of body image and strategies to lose weight and increase muscles among children. *J Appl Dev Psychol* 2005;26:559-77.
80. Stice E, Whitenton K. Risk factors for body dissatisfaction in adolescent girls: A longitudinal investigation. *Dev Psychol* 2002;38(5):669-78.
81. McCabe MP, Ricciardelli LA, Banfield S. Body image, strategies to change muscles and weights, and puberty: Do they impact on positive and negative affect among adolescent boys and girls. *Eat Behav* 2001;2:129-49.
82. McCabe MP, Ricciardelli LA. A longitudinal study of pubertal timing and extreme body change behaviors among adolescent boys and girls. *Adolescence* 2004;39(153):145-66.
83. May AL, Kim J-Y, McHale SM, Crouter AC. Parent-adolescent relationships and the development of weight concerns from early to late adolescence. *Int J Eat Disord* 2006;39:729-40.
84. Dittmar H, Lloyd B, Dugan S, Halliwell E, Jacobs N, Cramer H. The "body beautiful": English adolescents' images of ideal bodies. *Sex Roles* 2000;42:887-915.
85. Olmsted MP, McFarlane T. Body weight and body image. *BMC Women's Health* 2004;4(Suppl 1):S5.
86. Lappalainen R, Tuomisto M, Giachetti I, Amicis AD, Paquet S. Recent body-weight changes and weight loss practices in the European Union. *Public Health Nutr* 1999;2(1a):135-41.
87. Celio AA, Zabinski MF, Wilfley DE. African American body images. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 2002:234-42.
88. Neumark-Sztainer D, Croll J, Story M, Hannan PJ, French SA, Perry C. Ethnic/racial differences in weight-related concerns and behaviors among adolescents girls and boys: Finding from project EAT. *J Psychosom Res* 2002;53:963-74.
89. Garry JP, Morrissey SL, Whetstone LM. Substance use and weight loss tactics among middle school youth. *Int J Eat Disord* 2003;33:55-63.
90. Abrams LS, Stormer CC. Sociocultural variations in the body image perceptions of urban adolescent females. *J Youth Adolesc* 2002;31(6):443-50.

91. Shaw H, Ramirez L, Trost A, Randall P, Stice E. Body image and eating disturbances across ethnic groups: More similarities than differences. *Psychol Addict Behav* 2004;18(1):12-8.
92. Hesse-Biber SN, Howling SA, Leavy P, Lovejoy M. Racial identity and the development of body image issues among African American adolescent girls. *The Qualitative Report* 2004;9(1):49-79.
93. Franko DL, Striegel-Moore RH. The role of body dissatisfaction as a risk factor for depression in adolescent girls: Are the differences Black and White? *J Psychosom Res* 2002;53:975-83.
94. Padgett J, Biro FM. Different shapes in different cultures: Body dissatisfaction, overweight, and obesity in African-American and Caucasian females. *J Pediatr Adolesc Gynecol* 2003;16:349-54.
95. Rinderknecht K, Smith C. Body-image perceptions among urban native American youth. *Obes Res* 2002;10(5):315-27.
96. Altabe M, O'Garro K-GN. Hispanic body images. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical research*. New York: Guildford Press, 2002:250-5.
97. Barnett HL, Keel PK, Conoscenti LM. Body type preferences in Asian and Caucasian college students. *Sex Roles* 2001;45(11/12):867-78.
98. McCabe MP, Ricciardelli L, Mellor D, Ball K. Media influences on body image and disordered eating among indigenous adolescent Australians. *Adolescence* 2005;40(157):115-27.
99. Wardle J, Bindra R, Fairclough B, Westcombe A. Culture and body image: Body perception and weight concern in young Asian and Caucasian British women. *J Community Appl Soc Psychol* 1993;3:173-81.
100. Warren CS, Gleaves DH, Cepeda-Benito A, Fernandez MdC, Rodriguez-Ruiz S. Ethnicity as a protective factor against internalization of a thin ideal and body dissatisfaction. *Int J Eat Disord* 2005;37:241-9.
101. Mumford DB, Whitehouse AM, Platts M. Sociocultural correlates of eating disorders among Asian schoolgirls in Bradford. *Br J Psychiatry* 1991;158:222-8.
102. Kawamura KY. Asian American body images. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practices*. New York: Guildford Press, 2002:241-9.

103. Pope HG, Gruber AJ, Mangweth B, Bureau B, deCol C, Jouvent R, et al. Body image perception among men in three countries. *Am J Psychiatry* 2000;157:1297-1301.
104. Befort C, Nicpon MF, Kurplus SER, Huser L. Body image, self-esteem, and weight-related criticism from romantic partners. *Journal of College Student Development* 2001;42:1-13.
105. Forbes GB, Doraszewicz K, Card K, Adam-Curtis L. Association of the thin body ideal, ambivalent sexism, and self-esteem with body acceptance and the preferred body size of college women in Poland and the United States. *Sex Roles* 2004;50:331-45.
106. Ricciardelli LA, McCabe MP. Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls- Statistical data included. *Sex Roles* 2001;44:189-207.
107. Holt K, Ricciardelli LA. Social comparisons and negative affect as indicators of problem eating and muscle preoccupation among children. *J Appl Dev Psychol* 2002;23(3):285-304.
108. McCabe MP, Ricciardelli LA, Holt K. A longitudinal study to explain strategies to change weight and muscles among normal weight and overweight children. *Appetite* 2005;45:225-34.
109. Wertheim EH, Paxton SJ, Schutz HK. Why do adolescent girls watch their weight? An interview study examining sociocultural pressures to be thin. *J Psychosom Res* 1997;42(4):345-55.
110. Smolak L, Levine MP, Schermer F. Parental input and weight concerns among elementary school children. *Int J Eat Disord* 1999;25:263-71.
111. Huon G, Lim J, Gunewardene A. Social influences and female adolescent dieting. *J Adolesc* 2000;23:229-32.
112. Ogden J, Chanana A. Explaining the effect of ethnic group on weight concern: Finding a role for family values. *Int J Obes* 1998;22:641-7.
113. Benedikt R, Wertheim EH, Love A. Eating attitudes and weight-loss attempts in female adolescents and their mothers. *J Youth Adolesc* 1998;27(1):43-57.
114. Buri JR, Kirchner PA, Walsh JM. Familial correlates of self-esteem in young American adults. *J Soc Psychol* 1987;127(6):583-8.

115. Schwartz DJ, Phares V, Tantleff-Dunn S, Thompson JK. Body image, psychological functioning, and parental feedback regarding physical appearance. *Int J Eat Disord* 1999;25:339-43.
116. Osburn J. Body image as a function of positive and negative comments from peer and familial sources. URL http://www.uwm.edu/Dept/Grad_Sch/McNair/2005/osburn.pdf (accessed 13 June 2006).
117. McCabe MP, Ricciardelli LA. A longitudinal study of body change strategies among adolescent males. *J Youth Adolesc* 2003;32(2):105-13.
118. McCabe MP, Ricciardelli LA. A prospective study of pressures from parents, peers, and the media on extreme weight change behaviors among adolescent boys and girls. *Behav Res Ther* 2005;43:653-68.
119. Vincent MA, McCabe MP. Gender differences among adolescents in family, and peer influences on body dissatisfaction, weight loss, and binge eating behaviors. *J Youth Adolesc* 2000;29(2):205-21.
120. McCabe MP, Ricciardelli LA. Sociocultural influences on body image and body change strategies among adolescent boys and girls. *J Soc Psychol* 2003;143(1):5-26.
121. Eisenberg ME, Neumark-Sztainer D, Story M, Perry C. The role of social norms and friends' influences on unhealthy weight-control behaviors among adolescent girls. *Soc Sci Med* 2005;60:1165-73.
122. Lieberman M, Gauvin L, Bukowski WM, White DR. Interpersonal influence and disordered eating behaviors in adolescent girls: The role of peer modeling, social reinforcement, and body-related teasing. *Eat Behav* 2001;2:215-36.
123. Dohnt HK, Tiggemann M. Peer influences on body dissatisfaction and dieting awareness in young girls. *British Journal of Developmental Psychology* 2005;23:103-16.
124. Jones DC. Body image among adolescent girls and boys: A longitudinal study. *Dev Psychol* 2004;40(5):823-35.
125. Paxton SJ, Schutz HK, Wertheim EH, Muir SL. Friendship clique and peer influences on body image concerns, dietary restraints, extreme weight-loss behaviors, and binge eating in adolescent girls. *J Abnorm Psychol* 1999;108(2):255-66.
126. Stice E, Maxfield J, Wells T. Adverse effects of social pressure to be thin on young women: An experimental investigation of the effects of "fat talk". *Int J Eat Disord* 2003;34:108-17.

127. Wang Z, Byrne NM, Kenardy JA, Hills AP. Influences of ethnicity and socioeconomic status on the body dissatisfaction and eating behaviours of Australian children and adolescents. *Eat Behav* 2005;6(1):23-33.
128. Wills W, Backett-Milburn K, Gregory S, Lawton J. Young teenagers' perceptions of their own and others' bodies: A qualitative study of obese, overweight and 'normal' weight young people in Scotland. *Soc Sci Med* 2006;62(2):396-406.
129. Wardle J, Robb KA, Johnson F, Griffith J, Brunner E, Power C, et al. Socioeconomic variation in attitudes to eating and weight in female adolescents. *Health Psychol* 2004;23(3):275-82.
130. Wardle J, Griffith J. Socioeconomic status and weight control practices in British adults. *J Epidemiol Community Health* 2001;55:185-90.
131. Paxton SJ, Eisenberg ME, Neumark-Sztainer D. Prospective predictors of body dissatisfaction in adolescent girls and boys: A five-year longitudinal study. *Dev Psychol* 2006;42(5):888-99.
132. BBC NEWS. Warning over pro-anorexia sites, 6 January 2007. URL http://news.bbc.co.uk/2/hi/uk_news/6236529.stm (accessed 9 January 2007).
133. Ricciardelli LA, McCabe MP. Sociocultural and individual influences on muscle gain and weight loss strategies among adolescent boys and girls. *Psychol Sch* 2003;40(2):209-24.
134. Blowers LC, Loxton NJ, Grady-Flessner M, Occhipinti S, Dawe S. The relationship between sociocultural pressure to be thin and body dissatisfaction in preadolescent girls. *Eat Behav* 2003;4:229-44.
135. Eating Disorders Association. Some statistics, 21 September 2006. URL <http://www.edauk.com/NewsEventsPressMedia/PressMediaInformation/Somestatics> (accessed 19 January 2007).
136. National Institute of Mental Health. Eating Disorders: Facts about eating disorders and the search for solutions, 17 February 2006. URL <http://www.nimh.nih.gov/Publicat/eatingdisorders.cfm> (accessed 2 August 2006).
137. Griffiths RA, Beumont PJV, Russell J, Schotte D, Thornton C, Touyz S, et al. Sociocultural attitudes towards appearance in dieting disordered and nondieting disordered subjects. *European Eating Disorders Review* 1999;7:193-203.
138. Olivardia R. Body image and muscularity. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 2002:210-7.

139. Davis C. Body image and athleticism. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 2002:219-25.
140. Philen RM, Ortiz DI, Auerbach SB, Falk H. Survey of advertising for nutritional supplements in health and body building magazines. *JAMA* 1992;268(8):1008-11.
141. Field AE, Austin SB, Camargo CA, Taylor CB, Striegel-Moore RH, Loud KJ. Exposure to the mass media, body shape concerns, and the use of supplements to improve weight and shape among male and female adolescents. *Pediatrics* 2005;116(2):214-20.
142. Philips JM, Drummond MJN. An investigation into body image perception, body satisfaction and exercise expectations of male fitness leaders: implications for professional practice. *Leisure Studies* 2001;20:95-105.
143. Conner M, Johnson C, Grogan S. Gender, sexuality, body image and eating behaviours. *J Health Psychol* 2004;9(4):505-15.
144. Williamson I, Hartley P. British research into the increased vulnerability of young gay men to eating disturbance and body dissatisfaction. *European Eating Disorders Review* 1998;6:160-70.
145. Rothblum ED. Gay and lesbian body images. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 2002:257-65.
146. Hausenblas HA, Janelle C, Gardner R, Hagan A. Effects of exposure to physique slides on the emotional responses of men and women. *Sex Roles* 2002;47(11-12):569-75.
147. Yamamiya Y, Cash TF, Melnyk SE, Posavac HD, Povasac SS. Women's exposure to thin-and-beautiful media images: Body image effects of media-ideal internalization and impact-reduction interventions. *Body Image* 2005;2:74-80.
148. Turner SL, Hamilton H, Jacobs M, Angood L, Dwyer D. The influence of fashion magazine on the body image satisfaction of college women: an exploratory analysis. *Adolescence* 1997;32(127):603-14.
149. Stice E. Review of the evidence for sociocultural model of bulimia nervosa and an exploration of the mechanisms of action. *Clin Psychol Rev* 1994;14(7):633-61.
150. Richins ML. Social comparison and the idealized images of advertising. *J Consum Res* 1991;18:71-83.

151. Grogan S, Richards H. Body image: Focus groups with boys and men. *Men and Masculinities* 2002;4(3):219-32.
152. Labre MP. Adolescent boys and the muscular body ideal. *J Adolesc Health* 2002;30:233-42.
153. Lau ASM, Lum SK, Chronister KM, Forrest L. Asian American college women's body image: A pilot study. *Cultur Divers Ethnic Minor Psychol* 2006;12(2):259-74.
154. Cusumano DL, Thompson JK. Body image and body shape ideals in magazines: Exposure, awareness, and internalization. *Sex Roles* 1997;37:701-21.
155. Stice E, Schupak-Neuberg E, Shaw HE, Stein RI. Relation of media exposure to eating disorder symptomatology: An examination of mediation mechanism. *J Abnorm Psychol* 1994;103(4):836-40.
156. Garner DM, Garfinkel PE, Schwartz D, Thompson M. Cultural expectations of thinness in women. *Psychol Rep* 1980;47:483-91.
157. Wiseman CV, Gray JJ, Mosimann JE, Ahrens AH. Cultural expectations of thinness in women: An update. *Int J Eat Disord* 1992;11(1):85-9.
158. Sypeck MF, Gray JJ, Etu SF, Ahrens AH, Mosimann JE, Wiseman CV. Cultural representations of thinness in women, redux: Playboy magazine's depiction of beauty from 1979 to 1999. *Body Image* 2006;3:229-35.
159. Petrie TA, Austin LJ, Crowley BJ, Helmcamp A, Johnson CE, Lester R, et al. Sociocultural expectations of attractiveness for males. *Sex Roles* 1996;35(9-10):581-602.
160. Anderson AE, DiDomenico L. Diet vs shape content popular male and female magazines: A dose-response relationship to the incidence of eating disorders. *Int J Eat Disord* 1992;11:283-7.
161. Nemeroff CJ, Stein RI, Diehl NS, Smilack KM. From the Cleavers to the Clintons: Role choices and body orientation as reflected in magazine article content. *Int J Eat Disord* 1994;16:167-76.
162. Twamley EW, Davis MC. The sociocultural model of eating disturbance in young women: The effects of personal attributes and family environment. *J Soc Clin Psychol* 1999;18(4):467-89.
163. Morrison TG, Kalin R, Morrison MA. Body-image evaluation and body-image investment among adolescents: A test of sociocultural and social comparison theories. *Adolescence* 2004;39(155):571-92.

164. Rudman WJ, Verdi P. Exploitation: comparing sexual and violent imagery of females and males in advertising. *Women Health* 1993;20(4):1-14.
165. Franzoi SL. The body-as-object versus the body-as-process: Gender differences and gender considerations. *Sex Roles* 1995;33(5-6):417-37.
166. Sommers-Flanagan R, Sommers-Flanagan J, Davis B. What's happening on music television. *Sex Roles* 1993;28:745-53.
167. Feingold A. Good-looking people are not what we think. *Psychol Bull* 1992;111(2):304-41.
168. Eagly AH, Ashmore RD, Makhijani MG, Congo LC. What is beautiful is good, but ... : A meta-analytic review of research on the physical attractiveness stereotype. *Psychol Bull* 1991;110(1):109-28.
169. Dittmar H. Vulnerability factors and processes linking sociocultural pressures and body dissatisfaction. *J Soc Clin Psychol* 2005;24(8):1081-87.
170. Stormer SM, Thompson JK. Explanations of body image disturbance: A test of maturational status, negative verbal commentary, social comparison, and sociocultural hypotheses. *Int J Eat Disord* 1996;19(2):193-202.
171. Low KG, Charanasomboon S, Brown C, Ailtunen G, Long K. Internalization of the thin ideal, weight and body image concerns. *Soc Behav Pers* 2003;31(1):81-9.
172. Humphreys P, Paxton SJ. Impact of exposure to idealised male images on adolescent boys' body image. *Body Image* 2004;1:253-66.
173. Groesz LM, Levine MP, Murnen SK. The effect of experimental presentation of thin media images in body satisfaction: A meta-analytic review. *Int J Eat Disord* 2002;31:1-16.
174. Birkeland R, Thompson JK, Herbozo S, Roehrig M, Cafri G, Berg Pvd. Media exposure, mood, and body image dissatisfaction: an experimental test of person versus product priming. *Body Image* 2005;2:53-61.
175. Martin MC, Gentry JW. Stuck in the model trap: The effects of beautiful models in ads on female preadolescents and adolescents. *Journal of Advertising* 1997;26:19-33.
176. Wood JV. Theory and research concerning social comparison of personal attributes. *Psychol Bull* 1989;106(2):231-48.

177. Thomsen SR. Health and beauty magazine reading and body shape concerns among a group of college women. *Journalism and Mass Communication Quarterly* 2002;79(4):988-1007.
178. Halliwell E, Harvey M. Examination of a sociocultural model of disordered eating among male and female adolescents. *Br J Health Psychol* 2006;11:235-48.
179. McCutcheon LE, Lange R, Houran J. Conceptualization and measurement of celebrity worship. *Br J Psychol* 2002;93:67-87.
180. Tiggemann M. Media exposure, body dissatisfaction and disordered eating: Television and magazines are not the same. *European Eating Disorders Review* 2003;11:418-30.
181. Harrison K, Cantor J. The relationship between media consumption and eating disorders. *J Commun* 1997;47(1):40-67.
182. Holmstrom AJ. The effects of the media on body image: A meta-analysis. *Journal of Broadcasting and Electronic Media* 2004;48(2):196-217.
183. Chow J. Adolescents' perceptions of popular teen magazines. *J Adv Nurs* 2004;48(2):132-9.
184. Tiggemann M, Gardiner M, Slater A. "I would rather be size 10 than have straight A's": A focus group study of adolescent girls' wish to be thinner. *J Adolesc* 2000;23:645-59.
185. Utter J, Neumark-Sztainer D, Wall M, Story M. Reading magazine articles about dieting and associated weight control behaviors among adolescents. *J Adolesc Health* 2003;32:78-82.
186. Botta RA. For your health? The relationship between magazine reading and adolescents' body image and eating disturbances. *Sex Roles* 2003;48:389-99.
187. Harrison K. The body electric: Thin-ideal media and eating disorders in adolescents. *J Commun* 2000;50(3):119-43.
188. Borzekowski DLG, Robinson TN, Killen JD. Does the camera add 10 pounds? Media use, perceived importance of appearance, and weight concerns among teenage girls. *J Adolesc Health* 2000;26:36-41.
189. Heinberg LJ, Thompson JK. Body image and televised images of thinness and attractiveness: A controlled laboratory investigation. *J Soc Clin Psychol* 1995;14(4):325-38.

190. Hargreaves D, Tiggemann M. Longer-term implications of responsiveness to 'Thin-Ideal' television: Support for a cumulative hypothesis of body image disturbance. *European Eating Disorders Review* 2003;11:465-77.
191. Hargreaves DA, Tiggemann M. Idealized media images and adolescent body image: "comparing" boys and girls. *Body Image* 2004;1:351-61.
192. Field AE, Cheung L, Wolf AM, Herzog DB, Gortmaker SL. Exposure to the mass media and weight concerns among girls. *Pediatrics* 1999;103(3):E36.
193. Levine MP, Smolak L, Hayden H. The relation of sociocultural factors to eating attitudes and behaviors among middle school girls. *J Early Adolesc* 1994;14(4):471-90.
194. Jones DC, Vigfusdottir TH, Lee Y. Body image and the appearance culture among adolescent girls and boys: An examination of friend conversations, peer criticism, appearance magazines, and the internalization of appearance ideals. *J Adolesc Res* 2004;19(3):323-39.
195. Hatoum IJ, Belle D. Mags and abs: Media consumption and bodily concerns in men. *Sex Roles* 2004;51(7-8):397-407.
196. Taveras EM, Rifas-Shiman SL, Field AE, Frazier L, Colditz GA, Gillman MW. The influence of wanting to look like media figures on adolescent physical activity. *J Adolesc Health* 2004;35:41-50.
197. Cheskin LJ, Donze LF. Appearance vs Health as motivators for weight loss. *Medical Student JAMA* 2001;286(17):2160.
198. Biener L, Heaton A. Women dieters of normal weight: Their motives, goals, and risks. *Am J Public Health* 1995;85(5):714-7.
199. Brien KO, Venn BJ, Perry T, Green TJ, Aitken W, Bradson A, et al. Reasons for wanting to lose weight: Different strokes for different folks. *Eat Behav* 2007;8(1):132-5.
200. Reas DL, Masheb RM, Grilo CM. Appearance vs Health reasons for seeking treatment among obese patients with binge eating disorder. *Obes Res* 2004;12(5):758-60.
201. Wardle J, Haase A, Steptoe A. Body image and weight control in young adults: International comparisons in university students from 22 countries. *Int J Obes* 2006;30:644-51.
202. Serdula MK, Mokdad AH, Williamson DF, Galuska DA, Mendlein JM, Heath GW. Prevalence of attempting weight loss and strategies for controlling weight. *JAMA* 1999;282(14):1353-8.

203. Peters PK, Amos RJ, Hoerr SL, Koszewski W, Huang Y, Betts N. Questionable dieting behaviors are used by young adults regardless of sex or student status. *J Am Diet Assoc* 1996;96(7):709-11.
204. Ash SL, McClelland JW. Exploring attitudes towards body weight and eating behaviors of women in college. *The Forum for Family and Consumer Issues* 2001;6(2).
205. Smith CF, Burke LE, Wing RR. Vegetarian and weight-loss diets among young adults. *Obes Res* 2000;8(2):123-9.
206. Dorociak JD, Vincent ML. Use and knowledge of diet pills among female college students. *Health Educ* 1985;16(3):14-6.
207. Malinauskas BM, Raedeke TD, Aeby VG, Smith JL, Dallas MB. Dieting practices, weight perceptions, and body composition: A comparison of normal weight, overweight, and obese college females. *Nutr J* 2006;5:11.
208. Klesges RC, Mizes JS, Klesges LM. Self-help dieting strategies in college males and females. *Int J Eat Disord* 1987;6(3):409-17.
209. Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-dissatisfaction among Whites, Asian subgroups, Pacific Islanders, and African Americans. *J Adolesc Health* 2004;34:300-7.
210. Celio CI, Luce KH, Bryson SW, Winzelberg AJ, Cunning D, Rockwell R, et al. Use of diet pills and other dieting aids in a college population with high weight and shape concerns. *Int J Eat Disord* 2006;39:492-7.
211. Williamson D. Anabolic steroid use among students at British college of technology. *Br J Sports Med* 1993;27(3):200-1.
212. Krowchuk DP, Krietter SR, Woods CR, Sinal SH, Durant RH. Problem dieting behaviors among young adolescents. *Arch Pediatr Adolesc Med* 1998;152:884-8.
213. McVey G, Tweed S, Blackmore E. Correlates of weight loss and muscle-gaining behavior in 10-to 14-year-old males and females. *Prev Med* 2005;40:1-9.
214. Middleman AB, Vazquez I, Durant RH. Eating patterns, physical activity, and attempts to change weight among adolescents. *J Adolesc Health* 1998;22:37-42.
215. French SA, Perry CL, Leon GR, Fulkerson JA. Dieting behaviors and weight change history in female adolescents. *Health Psychol* 1995;14(6):548-55.

216. Lowry R, Galuska DA, Fulton JE, Wechsler H, Kann L. Weight management goals and practices among U.S. high school students: Associations with physical activity, diet, and smoking. *J Adolesc Health* 2002;31:133-44.
217. Cance JD, Ashley OS, Penne MA. Unhealthy weight control behaviors and MDMA (Ecstasy) use among adolescent females. *J Adolesc Health* 2005;37:19-25.
218. Field A, Austin SB, Taylor CB, Malspeis S, Rosner B, Rockett HR, et al. Relation between dieting and weight change among preadolescents and Adolescents. *Pediatrics* 2003;112(4):900-6.
219. Irving LM, Wall M, Neumark-Sztainer D, Story M. Steroid use among adolescents: Finding from project EAT. *J Adolesc Health* 2002;30:243-52.
220. Neumark-Sztainer D, Story M, Falkner N, Beuhring T, Resnick MD. Sociodemographic and personal characteristics of adolescents engaged in weight loss and weight/muscle gain behaviors: Who is doing what? *Prev Med* 1999;28:40-50.
221. Roberts SJ, Maxwell SM, Bagnall G, Bilton R. The incidence of dieting amongst adolescent girls: a question of interpretation. *J Hum Nutr Diet* 2001;14:103-9.
222. Kruger J, Galuska DA, Serdula MK, Jones DA. Attempting to lose weight: Specific practices among U.S. adults. *Am J Prev Med* 2004;26(5):402-6.
223. McGuire M, Wing R, Klem M, Seagle H, Hill J. Long-term maintenance of weight loss: do people who lose weight through various weight loss methods use different behaviors to maintain their weight? *Int J Obes* 1998;22:572-7.
224. Neumark-Sztainer D, Rock CL, Thornquist MD, Cheskin LJ, Neuhaus ML, Barnett MJ. Weight-control behaviors among adults and adolescents: Associations with dietary intake. *Prev Med* 2000;30:381-91.
225. Bendixen H, Madsen J, Bay-Hansen D, Boesen U, Ovesen LF. An observational study of slimming behavior in Denmark in 1992 and 1998. *Obes Res* 2002;10(9):911-22.
226. Jeffery RW, French SA. Socioeconomic status and weight control practices among 20- to 45-year-old women. *Am J Public Health* 1996;86(7):1005-10.
227. Dwyer JT, Allison DB, Coates PM. Dietary supplements in weight reduction. *J Am Diet Assoc* 2005;105:S80-6.

228. Chromium Information. Reported dangers of Chromium Picolinate. URL http://www.chromiuminformation.org/DANGERS_cancers_risks.htm (accessed 17 July 2006).
229. Updates: Risky 'Weight Loss' Product Prompts Warning from FDA. *FDA Consumer Magazine* 2000;34(2).
230. State of New York Department of Health. State health commissioner warns of dangers of weight loss product: Deadly dinitrophenols available through Internet sales, 10 August 2001. URL <http://www.health.state.ny.us/press/releases/2001/dinitrophenols.htm> (accessed 17 July 2006).
231. US Food and Drug Administration. Letter to Health Care Professionals - FDA Concerned About Botanical Products, Including Dietary Supplements, Containing Aristolochic Acid, 31 May 2000. URL <http://www.cfsan.fda.gov/~dms/ds-botl2.html> (accessed 17 July 2006).
232. Shekelle PG, Hardy ML, Morton SC. Efficacy and safety of ephedra and ephedrine for weight loss and athletic performance: A meta-analysis. *JAMA* 2003;289(12):1537-45.
233. Food and Drug Administration. FDA warns against drug promotion of "herbal phen-fen", 6 November 1997. URL <http://www.fda.gov/bbs/topics/ANSWERS/ANS00832.html> (accessed 29 November 2006).
234. U.S. Food and Drug Administration. FDA issues public health warning on phenylpropanolamine, 6 November 2000. URL <http://www.fda.gov/bbs/topics/ANSWERS/ANS01051.html> (accessed 9 September 2006).
235. Malone M. Enhancing pharmacist involvement in weight management- Time to get with the program. *Ann Pharmacother* 2004;38:1961-3.
236. Cleland R, Graybill DC. Commercial weight loss products and programs: What consumers stand to gain and lose. A public conference on the information consumers need to evaluate weight loss products and programs. *Crit Rev Food Sci Nutr* 2001;41(1):45-70.
237. Blenkinsopp A, Panton R, Anderson C. Health Promotion for Pharmacists. Oxford: Oxford University Press, 2000:144-5.
238. Christakis G, Miller-Kovach K. Maintenance of weight goal among Weight Watcher lifetime member. *Nutr Today* 1996;31(1):29-31.
239. Mason P. Popular slimming diets. *The Pharmaceutical Journal* 2002;269:135-7.

240. National Institute of Health and Clinical Excellence. 13 December 2006. <http://guidance.nice.org.uk/CG43/guidance> (accessed 31 May 2007).
241. Wang MQ, Yesalis CE, Fitzhugh EC, Buckley WE, Smiciklaswright H. Desire for weight-gain and potential risks of adolescent males using anabolic steroids. *Percept Mot Skills* 1994;78(1):267-74.
242. National Institute on Drug Abuse. NIDA Community Drug Alert Bulletin- Anabolic Steroids, 17 April 2000. URL <http://www.drugabuse.gov/SteroidAlert/Steroidalert.html> (accessed 17 July 2006).
243. American Academy of Pediatrics. Committee on Sports Medicine and Fitness. Adolescents and anabolic steroids: A subject review. *Pediatrics* 1997;99(6):904-8.
244. Middleman AB, Faulkner AH, Woods ER, Emans SJ, DuRant RH. High-risk behaviors among high school students in Massachusetts who use anabolic steroids. *Pediatrics* 1995;96(2):268-72.
245. CRIME REDUCTION & COMMUNITY SAFETY GROUP, Drug Legislation and Enforcement Unit. Home Office Circular 039/2003, 25 June 2003. URL <http://www.knowledgenetwork.gov.uk/HO/circular.nsf/79755433dd36a66980256d4f004d1514/73f5d31eeed615380256d4a00447c96?OpenDocument&Highlight=2,GHB> (accessed 17 July 2006).
246. Food and Drug Administration. FDA re-issues warning on GHB, 18 February 1997. URL <http://www.fda.gov/medwatch/SAFETY/1997/ghb.htm> (accessed 17 July 2006).
247. Maxwell JC. Patterns of club drug use in the US, 2004. URL <http://www.dshs.state.tx.us/sa/research/ClubDrug2004.pdf> (accessed 17 July 2006).
248. Manbir Online. Warning about bodybuilding supplement. URL <http://manbir-online.com/htm3/new.49.htm> (accessed 17 July 2006).
249. Kennedy MC. Newer drugs used to enhance sporting performance. *Med J Aust* 2000;173:314-7.
250. Pew internet and American life project. Online health search 2006, 29 October 2006. URL http://www.pewinternet.org/pdfs/PIP_Online_Health_2006.pdf (accessed 23 November 2006).
251. Harris Interactive. 4-country survey finds most cyberchondriacs believe online health care information is trustworthy, 11 June 2002. URL

- <http://www.harrisinteractive.com/news/allnewsbydate.asp?NewsID=464>
(accessed 23 November 2006).
252. Hanauer DA, Fortin J, Dibble E, Col NF. Use of the Internet for seeking health care information among young adults. *AMIA Annu Symp Proc* 2003;3003:857.
253. MedicineNet. MedicineNet Health Research Survey Report: Health concerns and weight management survey results, January 2005. URL <http://www.medicinenet.com/pdf/hr0501weightmanagement.pdf> (accessed 23 November 2006).
254. ComScore Networks. Press release: Sixty percent of consumers researching weight loss use the internet, seeking information on weight loss programs, diets and medications, 14 September 2006. URL <http://www.comscore.com/press/release.asp?press=997> (accessed 23 November 2006).
255. Burns E. Shoppers shift to online, 16 November 2005. URL <http://www.clickz.com/showPage.html?page=3564781> (accessed 23 November 2006).
256. Eysenbach G, Diepgen T. Towards quality management of medical information on the internet: evaluation, labeling, and filtering of information. *Br Med J* 1998;317:1496-502.
257. Wilson P, Risk A. How to find the good and avoid the bad or ugly: a short guide to tools for rating quality of health information on the internet. *Br Med J* 2002;324:598-602.
258. Shepperd S, Charnock D. University of Oxford. The DISCERN instrument, 1998. URL <http://www.discern.org.uk/discern.pdf> (accessed 17 July 2006).
259. The Advertising Standards Authority. Background briefing: Slimming advertisements. URL http://www.asa.org.uk/asa/focus/background_briefings/Slimming+Advertisements.htm (accessed 17 July 2006).
260. The Federal Trade Commission. Red flag: Bogus weight loss claims. URL <http://www.ftc.gov/bcp/online/pubs/buspubs/redflag.pdf> (accessed 17 July 2006).
261. Partnership for Healthy Weight Management. Voluntary guidelines for providers of weight loss products or services. URL <http://www.ftc.gov/bcp/online/pubs/buspubs/wgtguide.pdf> (accessed 17 July 2006).

262. Sport Medicine Plus, Department of Arkansas Children's Hospital. Medical/Athletic tips: Gaining weight safely. URL <http://www.teenhealth.net/Med%20Tips%20-%20Gaining%20Weight%20Safely.htm> (accessed 17 July 2006).
263. The University of Arizona, College of Agriculture and Life Sciences. How to evaluate ergogenic aid claims. URL <http://cals.arizona.edu/NSC/new/sn/evalergaids.htm> (accessed 17 July 2006).
264. The Advertising Standards Authority. General: ASA flexes its muscles, 14 October 2004. URL <http://www.asa.org.uk/asa/news/news/2004/ASA+flexes+its+muscles.htm>. (accessed 21 May 2006).
265. Miles J, Petrie C, Steel M. Slimming on the internet. *J R Soc Med* 2000;93:254-7.
266. Ashar BH, Miller RG, Getz KJ, Pichard CP. A critical evaluation of internet marketing of products that contain ephedra. *Mayo Clin Proc* 2003;78(8):944-6.
267. Easton MR, Morton WA. An assessment of herbal weight loss products. *J Pharm Pract* 1999;12(3):240-50.
268. The Advertising Standards Authority. A survey of slimming advertisements, 20 March 1995. URL http://www.asa.org.uk/NR/ronlyres/D4040C0F-103F-4C09-986D-9F5CFEABEE8B/0/ASA_Slimming_Report_Mar_1995.pdf (accessed 21 May 2006).
269. The Advertising Standards Authority. Compliance report: Slimming survey 2005. URL http://www.asa.org.uk/NR/ronlyres/FB5E482D-B939-4B8F-8ABB-0EA585EFD3CF/0/Slimming_Survey_Sep2005.pdf (accessed 24 November 2006).
270. Federal Trade Commission. Weight-loss advertising: An analysis of current trends, 2002. URL <http://www.ftc.gov/bcp/reports/weightloss.pdf> (accessed 21 May 2006).
271. Department of Health and Human Services. Warning letter, 28 February 2003. URL <http://www.fda.gov/bbs/topics/NEWS/ephedra/warning.html> (accessed 24 November 2006).
272. Haslam D. Obesity-time to wake up. *Br Med J* 2006;333:640-2.
273. Practice guidance: Obesity and overweight. *The Pharmaceutical Journal* 2005;274:435-6.

274. Department of Health. Choosing health through pharmacy: A programme for pharmaceutical public health 2005-2015. URL <http://www.dh.gov.uk/assetRoot/04/10/74/96/04107496.pdf> (accessed 12 June 2006).
275. Department of Health. Choosing health: making healthy choices easier. URL <http://www.dh.gov.uk/assetRoot/04/09/47/58/04094758.pdf> (accessed 16 June 2006).
276. The United Kingdom Parliament. Appendix 26: Memorandum by The Pharmaceutical Services Negotiating Committee (OB42). URL <http://www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmhealth/23/23we27.htm> (accessed 12 June 2006).
277. The United Kingdom Parliament. Appendix 40: Memorandum by the Royal College of Psychiatrists (OB77). URL <http://www.publications.parliament.uk/pa/cm200304/cmselect/cmhealth/23/23we41.htm> (accessed 12 June 2006).
278. Health Development Agency. The management of obesity and overweight: An analysis of reviews of diet, physical activity, and behavioural approaches- Evidence briefing. 1st edition, October 2003, 8 October 2003. URL <http://www.nice.org.uk/page.aspx?o=502623> (accessed 19 January 2007).
279. Department of Health. Implementing the new Community Pharmacy Contractual Framework: Information for Primary Care Trusts. URL <http://www.dh.gov.uk/assetRoot/04/10/92/57/04109257.pdf> (accessed 1 November 2006).
280. Boardman H, Lewis M, Trinder P, Rajaratnam G. Use of community pharmacies: a population-based survey. *J Public Health* 2005;27(3):254-62.
281. Royal Pharmaceutical Society of Great Britain. A response to the Department of Health Consultation: Choosing health? A consultation on improving people's health. URL <http://www.rpsgb.org.uk/pdfs/consdoc694.pdf> (accessed 12 June 2006).
282. Omar A. How pharmacists can contribute to obesity management. *The Pharmaceutical Journal* 2002;268:720-2.
283. Department of Health. Dawn of new era for pharmacy, 1 April 2005. URL http://www.dh.gov.uk/PublicationsAndStatistics/PressReleases/PressReleasesNotices/fs/en?CONTENT_ID=4107503&chk=SL9Ji9 (accessed 12 June 2006).
284. Mason P. OTC weight control products. *The Pharmaceutical Journal* 2002;269:103-5.

285. Dastani HB, Brown CM, O'Donnell DC. Combating the obesity epidemic: Community pharmacists' counseling on obesity management. *Ann Pharmacother* 2004;38:1800-4.
286. Dot Pharmacy. The hard fats. URL <http://www.dotpharmacy.com/upobese.html> (accessed 12 June 2006).
287. King R. National Pharmacy Association. Managing obesity in community pharmacy. URL <http://npa.atalink.co.uk/articles/93> (accessed 12 June 2006).
288. Malone M, Alger-Mayer SA, Anderson DA. The lifestyle challenge program: A multidisciplinary approach to weight management. *Ann Pharmacother* 2005;39:2015-20.
289. Bradley C, Henman M. Studies of health promotion and weight control in community pharmacy in the Republic of Ireland. Proceedings of the 5th Pharmaceutical Care Network Europe Working Conference; 2007 Feb 21-24; Goteberg, Sweden.
290. Ahrens R, Hower M, Best A. Effects of weight reduction interventions by community pharmacists. *J Am Pharm Assoc* 2003;43(5):583-9.
291. Iverson L, Mollison J, MacLeod TNN. Attitudes of the general public to the expanding role of community pharmacists: a pilot study. *Fam Pract* 2001;18(5):534-6.
292. Bescoby S, Millar D. Obesity management in a community pharmacy setting - a pilot study. Proceedings of The British Pharmaceutical Conference; 2006 Sep 4-6; Manchester, UK.
293. SIL International. Methods for evaluation and testing, 16 September 1999. URL <http://www.sil.org/lingualinks/literacy/ImplementALiteracyProgram/MethodsOfEvaluationAndTesting.htm> (accessed 26 January 2007).
294. Hickey K. Methods of evaluation, 7 January 2002. URL <http://lrs.ed.uiuc.edu/wp/credibility/page3.html> (accessed 26 January 2007).
295. Shepperd S, Charnock D, Cook A. A 5-star system for rating quality of information based on DISCERN. *Health Information and Libraries Journal* 2002;19:201-5.
296. Spector PE. *Summated rating scale construction: an introduction*. Newbury Park, CA: Sage Publications, 1992:1-10.
297. Busch C, Maret PSD, Flynn T, Kellum R, Le S, Meyers B, et al. Content analysis. URL <http://writing.colostate.edu/guides/research/content/index.cfm> (accessed 8 November 2006).

298. Charnock D, Shepperd S. Learning to DISCERN online: applying an appraisal tool to health websites in a workshop setting. *Health Educ Res* 2004;19(4):440-6.
299. Gray NJ, Klein JD, Cantrill JA, Noyce PR. 'How do you spell gonorrhea' Adolescents' health literacy and the Internet. Proceedings of The Annual Meeting of the Academy for Health Services Research and Health Policy; 2002 Jun 23-25; Washington DC, USA.
300. Hansen DL, Derry HA, Resnick PJ, Richardson CR. Adolescents searching for health information on the Internet: An observation study. *J Med Internet Res* 2003;5(4):e25.
301. Koo M, Skinner H. Improving web searches: Case study of quit-smoking web sites for teenagers. *J Med Internet Res* 2003;5(4):e28.
302. Litwin MS. *How to measure survey reliability and validity. Survey Kit Series, Vol 7*. Thousand Oaks, CA: Sage Publications, 1995:81-5.
303. Hinton PR, Brownlow C, McMurray I, Cozens B. Chapter 18: Using SPSS to analyse questionnaires: Reliability. *SPSS Explained*. New York: Routledge, 2004:355-65.
304. Federal Trade Commission. Do the right thing (apologies to Spike Lee), 11 February 2003. URL <http://www.ftc.gov/speeches/muris/030211rightthing.htm> (accessed 21 May 2006).
305. Theodosiou L, Green J. Emerging challenges in using health information from the Internet. *Advances in Psychiatric treatment* 9(5):387-96.
306. Miller RL, Acton C, Fullerton DA, Maltby J. *SPSS for social scientists*. London: PALGRAVE MACMILLAN, 2002
307. Moser CA, Kalton G. Chapter 11: Method of collecting the information 2- Mail questionnaire. *Survey methods in social investigation*. Hampshire, England: Dartmouth Publishing Company, 1985:256-69.
308. StatPac Inc. Advantages of written questionnaires. URL <http://www.statpac.com/surveys/advantages.htm> (accessed 27 December 2006).
309. Milne J. Learning Technology Dissemination Initiative. Questionnaires: Some advantages and disadvantages. URL http://www.icbl.hw.ac.uk/ltld/cookbook/info_questionnaires/printable.pdf (accessed 20 January 2007).
310. Stunkard AJ, Sorensen T, Schulsinger F. Use of the Danish adoption register for the study of obesity and thinness. In: Kety SS , Rowland LP , Sidman RL,

Matthysse SW, editors. *The genetics of Neurological and Psychiatric*. New York: Raven Press, 1983:115-20.

311. Thompson JK, Altabe MN. Psychometric qualities of the figure rating scale. *Int J Eat Disord* 1991;10(5):615-9.
312. Garner DM, Kearney-Cooke A. Body image 1996. *Psychol Today* 1996;29(2):55-6.
313. Cooper PJ, Taylor MJ, Cooper Z, Fairburn CG. The development and validation of the Body Shape Questionnaire. *Int J Eat Disord* 1987;6(4):485-94.
314. Evans C, Dolan B. Body Shape Questionnaire: Derivation of shortened "alternate forms". *Int J Eat Disord* 1993;13(3):315-21.
315. Mazzeo SE. Modification of an existing measure of body image preoccupation and its relationship to disordered eating in female college students. *J Couns Psychol* 1999;46(1):42-50.
316. Heinberg LJ, Thompson JK, Stormer S. Development and validation of the Sociocultural Attitudes Towards Appearance questionnaire. *Int J Eat Disord* 1995;17(1):81-9.
317. Smolak L, Levine MP, Thompson JK. The use of the sociocultural attitudes towards appearance questionnaire with middle school boys and girls. *Int J Eat Disord* 2001;29:216-23.
318. Shisslak CM, Renger R, Sharpe T, Crago M, McKnight KM, Gray N, et al. Development and evaluation of the McKnight Risk Factor Survey for assessing potential risk and protective factors for disordered eating in preadolescent and adolescent girls. *Int J Eat Disord* 1999;25:195-214.
319. McCabe MP, Ricciardelli LA. The structure of the perceived sociocultural influences on body image and body change questionnaire. *Int J Behav Med* 2001;8(1):19-41.
320. British Medical Journal. Statistics at square one: Correlation and regression. URL <http://www.bmj.com/statsbk/11.dtl> (accessed 24 August 2006).
321. Smith F. Qualitative interviews. *Research methods in pharmacy practice*. London: the Pharmaceutical Press, 2002:111-42.
322. Britten N, Jones R, Murphy E, Stacy R. Qualitative research methods in general practice and primary care. *Fam Pract* 1995;12(1):104-14.

323. Brown C, Lloyd K. Qualitative methods in psychiatric research. *Advances in Psychiatric treatment* 2001;7:350-6.
324. Pope C, Mays N. Qualitative research: Reaching the parts other methods cannot reach: an introduction methods in health and health services research. *Br Med J* 1995;311:42-5.
325. Stevenson FA, Britten N, Barry CA, Barber N, Bradley CP. Qualitative methods and prescribing research. *J Clin Pharm Ther* 2000;25:317-24.
326. Mays N, Pope C. Qualitative research in health care: Assessing quality in qualitative research. *Br Med J* 2000;320:50-2.
327. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Health Education Today* 2004;24:105-12.
328. Tobin GA, Berley CM. Methodological rigour within a qualitative framework. *J Adv Nurs* 2004;48(4):388-96.
329. Golafshani N. Understanding reliability and validity in qualitative research. *The Qualitative Report* 2003;8(4):597-607.
330. Thorne S. Data analysis in qualitative research. *Evid Based Nurs* 2000;3:68-70.
331. Boeije H. A purposive approach to the constant comparative method in the analysis of qualitative interviews. *Qual Quant* 2002;36:391-409.
332. Data analysis in qualitative research. URL <http://www.homestead.com/peoplelearn/PXGS6102DataAnalysisQualitative.html> (accessed 27 September 2006).
333. Maykut P, Morehouse R. *Beginning qualitative research: A philosophic and practical guide*. London: Falmer Press, 1994:126-49.
334. Thompson JK, Berg PVD. Measuring body image attitudes among adolescents and adults. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 2002:142-54.
335. Dunn KM, Jordan K, Lacey RJ, Shapley M, Jinks C. Patterns of consent in epidemiologic research: Evidence from over 25,000 responders. *Am J Epidemiol* 2004;159(11):1087-94.
336. VanLoon AJM, Tijhuis M, Picavet HSJ, Surtees PG, Ormel J. Survey non-response in the Netherlands: Effects on prevalence estimates and associations. *Ann Epidemiol* 2003;13:105-10.

337. Kearney-Cooke A. Familial influences on body image development. In: Cash TF, Pruzinsky T, editors. *Body Image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 2002:99-107.
338. Tiggemann M. Media influences on body image development. In: Cash TF, Pruzinsky T, editors. *Body image: A handbook of theory, research and clinical practice*. New York: Guildford Press, 2002:91-8.
339. Davies E. The Sun Online. News: Skin and ban: Size zero models, 16 February 2007. URL <http://www.thesun.co.uk/article/0,,2-2007070757,00.html> (accessed 28 March 2007).
340. The National Health Services. Pharmacies in Nottingham City Primary Care Trust. URL <http://www.nhs.uk/England/Pharmacies/MapSearch.aspx?RegionCode=5EM> (accessed 26 October 2006).
341. Nottingham City Council. Indices of deprivation 2004: Incomes domain. URL http://www.nottinghamcity.gov.uk/id04_income_a4-2.pdf (accessed 11 December 2006).

APPENDICES

APPENDIX 1: The DISCERN tool

DISCERN

**An instrument for judging the quality
of written consumer health information on
treatment choices**

Funded by The British Library

For further information please contact:

Sasha Shepperd
University of Oxford
Division of Public Health and Primary Health Care
Institute of Health Sciences
Old Road
Headington
Oxford OX3 7LF

Section I

IS THE PUBLICATION RELIABLE?

1 Are the aims clear?

No		Partially		Yes
1	2	3	4	5

HINT Look for a clear indication at the beginning of the publication of:

- what it is about
- what it is meant to cover (and what topics are meant to be excluded)
- who might find it useful.

If the answer to Question 1 is 'No', go directly to Question 3

2 Does it achieve its aims?

No		Partially		Yes
1	2	3	4	5

HINT Consider whether the publication provides the information it aimed to as outlined in Question 1.

3 Is it relevant?

No		Partially		Yes
1	2	3	4	5

HINT Consider whether:

- the publication addresses the questions that readers might ask
- recommendations and suggestions concerning treatment choices are realistic or appropriate.

4 Is it clear what sources of information were used to compile the publication (other than the author or producer)?

No		Partially		Yes
1	2	3	4	5

HINT

- Check whether the main claims or statements made about treatment choices are accompanied by a reference to the sources used as evidence, e.g. a research study or expert opinion.
- Look for a means of checking the sources used such as a bibliography/reference list or the addresses of the experts or organisations quoted.

Rating note: In order to score a full '5' the publication should fulfil both hints. Lists of *additional* sources of support and information (Q7) are not necessarily sources of *evidence* for the current publication.

5 Is it clear when the information used or reported in the publication was produced?

No		Partially		Yes
1	2	3	4	5

HINT Look for:

- dates of the main sources of information used to compile the publication
- date of any revisions of the publication (but not dates of reprinting)
- date of publication (copyright date).

Rating note: The hints are placed in order of importance – in order to score a full '5' the dates relating to the first hint should be found.

6 Is it balanced and unbiased?

No		Partially		Yes
1	2	3	4	5

HINT Look for:

- a clear indication of whether the publication is written from a personal or objective point of view
- evidence that a *range* of sources of information was used to compile the publication, e.g. more than one research study or expert
- evidence of an external assessment of the publication.

Be wary if:

- the publication focuses on the advantages or disadvantages of one particular treatment choice without reference to other possible choices
- the publication relies primarily on evidence from single cases (which may not be typical of people with this condition or of responses to a particular treatment)
- the information is presented in a sensational, emotive or alarmist way.

7 Does it provide details of additional sources of support and information?

No		Partially		Yes
1	2	3	4	5

HINT Look for suggestions for further reading or for details of other organisations providing advice and information about the condition and treatment choices.

8 Does it refer to areas of uncertainty?

No		Partially		Yes
1	2	3	4	5

HINT

- Look for discussion of the gaps in knowledge or differences in expert opinion concerning treatment choices.
- Be wary if the publication implies that a treatment choice affects everyone in the same way, e.g. 100% success rate with a particular treatment.

Section 2

HOW GOOD IS THE QUALITY OF INFORMATION ON TREATMENT CHOICES?

N.B. The questions apply to the treatment (or treatments) described *in the publication*. Self-care is considered a form of treatment throughout this section.

9 Does it describe how each treatment works?

No		Partially		Yes
1	2	3	4	5

HINT Look for a description of how a treatment acts on the body to achieve its effect.

10 Does it describe the benefits of each treatment?

No		Partially		Yes
1	2	3	4	5

HINT Benefits can include controlling or getting rid of symptoms, preventing recurrence of the condition and eliminating the condition, both short-term and long-term.

11 Does it describe the risks of each treatment?

No		Partially		Yes
1	2	3	4	5

HINT Risks can include side-effects, complications and adverse reactions to treatment, both short-term and long-term.

12 Does it describe what would happen if no treatment is used?

No		Partially		Yes
1	2	3	4	5

HINT Look for a description of the risks and benefits of postponing treatment, of watchful waiting (i.e. monitoring how the condition progresses without treatment) or of permanently forgoing treatment.

13 Does it describe how the treatment choices affect overall quality of life?

No		Partially		Yes
1	2	3	4	5

HINT Look for:

- description of the effects of the treatment choices on day-to-day activity
- description of the effects of the treatment choices on relationships with family, friends and carers.

14 Is it clear that there may be more than one possible treatment choice?

No		Partially		Yes
1	2	3	4	5

HINT Look for:

- a description of who is most likely to benefit from each treatment choice mentioned, and under what circumstances
- suggestions of alternatives to consider or investigate further (including choices not fully described in the publication) before deciding whether to select or reject a particular treatment choice.

15 Does it provide support for shared decision-making?

No		Partially		Yes
1	2	3	4	5

HINT Look for suggestions of things to discuss with family, friends, doctors or other health professionals concerning treatment choices.

Section 3

OVERALL RATING OF THE PUBLICATION

16 Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices

Low		Moderate		High
<i>Serious or extensive shortcomings</i>		<i>Potentially important but not serious shortcomings</i>		<i>Minimal shortcomings</i>
1	2	3	4	5

Copyright British Library and the University of Oxford 1997

APPENDIX 2: Evaluation tool for weight loss product advertisements

1. Does it describe how diet aids work?

No	Partially	Yes
0	1	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Does it describe the benefits of not being overweight?

NB: Risk associated with obesity; increase risk of heart disease, diabetes, some form of cancer, osteoarthritis, stroke and sleep apnea.

No	Partially	Yes
0	1	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Does it state ingredients of the product?

☐ Not Applicable Rating score = 0

☐ Yes, does it include any of these ingredients?

3.1 Ephedra or Ma Huang

☐ Yes ☐ No

3.2 Chromium Picolinate

☐ Yes ☐ No

3.3 Triiodothyroacetic acid (TRIAC)

☐ Yes ☐ No

3.4 Dinitrophenols (DNP)

☐ Yes ☐ No

3.5 Aristolochic acids

☐ Yes ☐ No

Rating question

0	1	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
>1 yes	1 yes	All no

4. Does it describe the risks of this product?

4.1 consult with medical professional in specific people

☐ Yes ☐ No ☐ Not Applicable

4.2 provide consumer warnings

☐ Yes ☐ No ☐ Not Applicable

4.3 That a user should not lose more than 2lbs per week

☐ Yes ☐ No ☐ Not Applicable

4.4 That VLCD should be used for less than 4 weeks

☐ Yes ☐ No ☐ Not Applicable

4.5 Any side effects e.g. dizziness, interrupt menstrual cycle and hair loss

☐ Yes ☐ No ☐ Not Applicable

Rating the question

0	1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All no					All yes

5. Does it mention other strategies for helping to lose weight?

5.1 exercise

☐ Yes ☐ No ☐ Not Applicable

5.2 healthy eating

☐ Yes ☐ No ☐ Not Applicable

5.3 reduce calories from fat

☐ Yes ☐ No ☐ Not Applicable

5.4 eat more vegetables and fruits

☐ Yes ☐ No ☐ Not Applicable

Rating the question

0	1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All no					All yes

6. Does it say it has scientific evidence to prove the efficacy of the product?

6.1 result from rigorous trials

☐ Yes ☐ No ☐ Not Applicable

6.2 results from studies, but no evidence

☐ Yes ☐ No ☐ Not Applicable

6.3 consumer testimonials

☐ Yes ☐ No ☐ Not Applicable

6.4 “before and after” photographs

☐ Yes ☐ No ☐ Not Applicable

6.5 staff credentials (weight loss programme)

☐ Yes ☐ No ☐ Not Applicable

Rating the question

0	1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All no

All yes

7. Is the efficacy of product claimed to?

7.1 cause substantial weight loss

☐ Yes ☐ No ☐ Not Applicable

7.2 cause rapid weight loss

☐ Yes ☐ No ☐ Not Applicable

7.3 show dieters cannot fail and can eat as much as they like and still lose weight

☐ Yes ☐ No ☐ Not Applicable

7.4 cause permanent weight loss

☐ Yes ☐ No ☐ Not Applicable

7.5 lose weight from specific body part

☐ Yes ☐ No ☐ Not Applicable

7.6 block or absorb fat, carbohydrate or calories

☐ Yes ☐ No ☐ Not Applicable

7.7 cause substantial weight loss by wearing on the body or rubbing into the skin

☐ Yes ☐ No ☐ Not Applicable

Rating the question

0	1	2	3	4	5	6	7
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All yes

All no

8. Does it refer to areas of uncertainty?

8.1 other choices for losing weight

☐ Yes ☐ No ☐ Not Applicable

8.2 contradictory evidence

☐ Yes ☐ No ☐ Not Applicable

8.3 benefit to a specific group

☐ Yes ☐ No ☐ Not Applicable

Rating the question

0	1	2	3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All no

All yes

9. Does it include: -

9.1 Recommended dosage

☐ Yes

☐ No

☐ Not Applicable

9.2 Cost

☐ Yes

☐ No

☐ Not Applicable

9.3 Duration of use

☐ Yes

☐ No

☐ Not Applicable

Rating Question

0

☐

All no

1

☐

2

☐

3

☐

All yes

10. Based on the answers to all of the above questions, rate the overall quality of information on Web site about weight loss products, based on total scores from each section

Low

1

☐

≤9

2

☐

10-16

Moderate

3

☐

17-22

4

☐

23-28

High

5

☐

≥29

APPENDIX 3: Evaluation tool for weight gain product advertisements

1. Does it describe how the product works?

No	Partially	Yes
0	1	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Does it describe the benefits of not being underweight?

NB: Infertility, depression, abnormal hunger regulation, unable to keep warm

No	Partially	Yes
0	1	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Does it state ingredients of the product?

☐ Not Applicable Rating score = 0

☐ Yes, does it include any of these ingredients?

3.1 Steroid or steroid hormone precursor (dehydroepiandrosterone, androstenedione, 4-Androstene-3,17-dione, 19-Nor-4-Androstene-3,17-diol, 19-Nor-4-Androstene-3,17-dione, 5-Androstene-3,17-diol, 19-Nor-5-Androstene-3,17-dione)

☐ Yes ☐ No

3.2 GHB (Gammahydroxy-butyrate) or Gamma-butyrolactone

☐ Yes ☐ No

3.3 1,4-butanediol

☐ Yes ☐ No

3.4 Ephedrine group alkaloids or Ma Huang

☐ Yes ☐ No

3.5 Creatine

☐ Yes ☐ No

Rating question

0	1	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
>1 yes	1 yes	All no

4. Does it describe the risks of this product?

4.1 consult with medical professional for specific people

☐ Yes ☐ No ☐ Not Applicable

4.2 provide customer warnings

☐ Yes ☐ No ☐ Not Applicable

4.3 can experience any side effects e.g. infertility, psychological problems, breast growth, severe acne, aggressiveness, irritability, hair loss

☐ Yes ☐ No ☐ Not Applicable

Rating the question

0 ☐ 1 ☐ 2 ☐ 3 ☐
All no All yes

5. Does it mention other strategies for helping to gain weight or build muscle?

5.1 exercise

☐ Yes ☐ No ☐ Not Applicable

5.2 adequate protein intake

☐ Yes ☐ No ☐ Not Applicable

5.3 eating enough calories from carbohydrates, fat, vegetables, beans, pulses and whole grains

☐ Yes ☐ No ☐ Not Applicable

Rating the question

0 ☐ 1 ☐ 2 ☐ 3 ☐
All no All yes

6. Does it say it has scientific evidence to prove the efficacy of the product?

6.1 results from rigorous trials

☐ Yes ☐ No ☐ Not Applicable

6.2 results from studies, but no evidence

☐ Yes

☐ No

☐ Not Applicable

6.3 testimonials from users including pictures to show “before and after” use

☐ Yes

☐ No

☐ Not Applicable

Rating the question

0

☐

All no

1

☐

2

☐

3

☐

All yes

7. Is the efficacy of product claimed to?

7.1 boost testosterone levels

☐ Yes

☐ No

☐ Not Applicable

7.2 build muscle or gain weight in very short time

☐ Yes

☐ No

☐ Not Applicable

7.3 increase strength, muscle growth

☐ Yes

☐ No

☐ Not Applicable

Rating the question

0

☐

All yes

1

☐

2

☐

3

☐

All no

8. Does it refer to areas of uncertainty?

8.1 other choices for weight gain

☐ Yes

☐ No

☐ Not Applicable

8.2 contradictory evidence

☐ Yes

☐ No

☐ Not Applicable

8.3 benefit to a specific group

☐ Yes

☐ No

☐ Not Applicable

Rating the question

0	1	2	3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All no			All yes

9. Does it include: -

9.1 Recommended dosage

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Applicable
------------------------------	-----------------------------	---

9.2 Cost

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Applicable
------------------------------	-----------------------------	---

9.3 Duration of use

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Applicable
------------------------------	-----------------------------	---

Rating Question

0	1	2	3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All no			All yes

10 Based on the answers to all of the above questions, rate the overall quality of information on Web site about weight gain products, based on a total score for each section.

Low				High
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
≤ 8	9-12	13-16	17-20	≥21

APPENDIX 4: A sample of 50 weight loss product websites

1. <http://www.worldwideshoppingmall.com/body-perfect/davina-slimming-supplements.asp>.
2. <http://www.annecollins.com>.
3. <http://www.healthrack.co.uk/home.htm>.
4. <http://www.asontv.com/products/967056176.html>.
5. <http://slimming-pills.virtualave.net>.
6. http://www.upforlife.co.uk/lose_weight_info.html.
7. <http://www.weightlossandslimming.co.uk/prodpage.asp?ProdID=1010>.
8. <http://www.slp-slimming.co.uk/slimming-patches.html>.
9. http://www.slimmingsupplements.co.uk/products/Sida_Cordifolia_Complex.asp.
10. http://www.slimmingsolutions.co.uk/acatalog/Weight_Loss_Diet_Patches_and_Slimming_Pills.html.
11. http://www.nhomag.com/weight_loss.asp.
12. <http://www.weightlossguide.com>.
13. <http://www.weightremedy.net/supplementreviews.html>.
14. <http://www.weightlosslab.com/newpage1.htm>.
15. <http://www.4slimmingpills.com/thyroleam.htm>.
16. http://www.naturesrx.co.uk/en-gb/dept_1.html.
17. http://store.maximuscle.co.uk/cgi-bin/maximuscle.storefront/406440ef00fe54e4273f0a020a0105d0/Product/View/S_LIM
18. <http://www.mistertest.com/slimming-products/weight-loss-management-185.html>.
19. <http://www.diet-products-weight-loss.com/trimlife.html>.
20. <http://www.slim-shop.biz/uk/ProductPages/product01.html>.
21. <http://www.weightloss-naturally.com/thermogenics.htm>.
22. <http://www.tests-shop.com/category33>.
23. <http://www.bio-health.co.uk/docs/pages/products/licencedherbal/classicgeneric/boldo.html>.
24. <http://www.safeweb.natureflower.com/ionamin.html>.
25. http://www.slimming.netfirms.com/Thermo-Lift_Night_Solutions.htm.
26. <http://coconutdiet.com/index.htm>.
27. <http://atkins.com>.
28. <http://www.a-weight-loss-diet-pill.com/index.html>.
29. <http://www.store.yahoo.com/carboblock>.
30. <http://www.vitacost.com/Store/Products/ProductDescription.cfm?SKUNumber=0235&homepage=yes>.
31. <http://www.mistertest.com/slimming-products/seaweed-soap-177.html>.
32. <http://www.freeweightloss.com/ebook.html?hop=123abc>.
33. <http://www.weight-loss-help.com/anorex-sf.htm>.
34. <http://ehealthy4u.com/?refid=searchfeed-19705>.
35. http://secure.agoramedia.com/index_sbd5.asp?promo=7BA99B16-34DE-438F-8F0D-D9B4A75063DB&email=.
36. <http://www.miracleburn.com/az/index2.htm>.
37. <http://www.slimsteady.co.uk/Weight-loss-chewing-gum.htm>.
38. <http://www.slimmingcentres.co.uk/centreDownload.htm>.
39. <http://www.slimming-pills.com/home2.htm>.

40. http://www.goodnessdirect.co.uk/cgi-local/sect_gen/SSPR.html.
41. <http://www.amah.co.uk/products/shakes.htm>.
42. <http://www.worldwidehealthcenter.net/category.php?prod=48>.
43. <http://xenical.pills-com.co.uk>.
44. <http://superfastdiet.com/epp.shtml>.
45. http://www.weightwatchers.co.uk/util/lnd/index_37A.aspx.
46. <http://www.naturaltherapy2000.co.uk/slimcare.htm#no.2>.
47. <http://www.ukreductil.co.uk/index1.htm>.
48. <http://www.health4all.co.uk/Product.asp?Group=6&ID=170>.
49. http://www.symmetry.org.uk/acatalog/Symmetry_Catalogue_Herbal_Weight_Loss_Supplements_Premium_Plus_42.html#aS1231.
50. http://www.biovea.net/product_detail.asp?PID=189&CID=12

APPENDIX 5: A sample of 50 weight gain product websites

1. http://www.goodlifehealth.freeuk.com/creatine_es8000.htm
2. http://www.creatinestore.co.uk/Products/Maximuscle_Cyclone.asp
3. <http://www.lamuscle.com/warp/navigate.php3?d=products&o=>
4. http://www.creatamax.com/cmax_8000GL.html
5. <http://www.weight-gain-tips.com/Whey-Protein.html>
6. <http://www.slim4health.com/fl234.html>
7. <http://www.lookfit.co.uk/sports-supplements-want-to-gain-weight.asp>
8. <http://www.leanmuscle-mass.com/trolleyed/3/>
9. <http://www.tigerfitness.com/Muscularity.htm>
10. <http://www.nutritionwholesalers.com/shopexd.asp?id=474>
11. <http://www.myvitamet.com/an4ad200mg60.html>
12. http://www.amazing-hgh.com/pro_hgh.htm
13. <http://www.muscle-weight-gain.com/>
14. <http://www.bodybuilding.com/store/pin/nox2.html>
15. <http://www.fizogen.com/oncycle.php>
16. <http://www.beverlyinternational.com/products/muscularity.html>
17. <http://www.vitamaker.com/eas-hmb.html>
18. <http://www.muscle-shop.co.uk/product.asp?ProdID=1340&CtgID=1050>
19. http://www.upforlife.co.uk/nutritional_supplement_info.html
20. <http://www.ishop.co.uk/ishop/934/shopsr283.html>
21. <http://www.worldwideshoppingmall.co.uk/look-fit/sports-supplement-body-builder-55.asp>
22. <http://www.1getfit.com/product.phtml/prod753/>
23. <http://gymratz.co.uk/bodybuilding-supplements/item129.htm>
24. http://www.gcpuk.co.uk/product_info.php/manufacturers_id/12/products_id/268
25. <http://www.bodyhut.com/cgi-bin/shop.cgi?detail=yes&product=0044>
26. <http://www.joemuscle.com/musclestack.html>
27. <http://www.xsportsnutrition.com/massxplosion.html>
28. <http://www.bodybuilding-store.com/celltech4.html>
29. <http://www.musclesurf.com/howtogainwei.html>
30. <http://www.ultimate-weight-products.com/page/UN/PROD/Muscle/MT-125>
31. <http://www.bodybuildingforyou.com/pro-hormones/ergopharm-1-ad-prohormone.htm>
32. <http://milleniumfitness.com/san-supplements/san-v12/>
33. <http://www.intense-workout.com/supplements.htm>
34. <http://www.megasportssupplements.com/mk-001.html>
35. <http://www.power-zone.com/hgh.htm>
36. <http://www.bodybuildingbeach.com/>
37. http://www.hcmuscle.com/Ad/impactprostack_a.aspx
38. <http://www.trulyhuge.com/andro-sh.htm>
39. <http://www.musclegainstips.com/>
40. <http://www.davedraper.com/gain-weight.html>
41. <http://www.weightgainguidance.com/>
42. <http://www.zooscape.com/cgi-bin/maitred/GreenCanyon/questa100254/specieCDN>
43. <http://www.bodybuildingsupplements.org.uk/promaxextreme.htm>
44. <http://www.snxnutrition.co.uk/products/HMB.htm>

45. http://www.drfoot.co.uk/acatalog/Build_Muscle.html
46. <http://www.heroesmuscle.co.uk/item21.htm>
47. http://www.bodybuildingsupplementsx.co.uk/energy_.html
48. http://www.1st4supplements.co.uk/catalog/product_info.php/products_id/109?PHPSESSID=c6c9b5adacdc3f2c7e74a3b4c491396b
49. <http://www.thesupplementstore.co.uk/maximuscle/progain.htm>
50. <http://www.naturalmatter.co.uk/astDymetadrineXtremeEU.html>

APPENDIX 6: Reliability test results for evaluation tools

TEST-RETEST RELIABILITY TEST RESULTS

Weight loss strategies

Sample number	Old value	New value
3	3	3
5	3	3
8	1	2
11	2	3
16	1	2
21	2	2
24	2	2
27	3	4
31	1	2
37	4	3
43	3	3
49	1	1

Weight gain strategies

Sample number	Old value	New value
4	1	1
6	1	1
11	1	1
19	3	2
24	1	1
29	2	2
33	2	3
38	1	1
41	2	2
43	1	2
45	1	2
49	1	1

INTER-CODER RELIABILITY TEST RESULTS

Weight loss strategies

Sample number	Original coding	Second coding
3	3	2
5	3	3
8	1	1
11	2	2
16	1	1
21	2	2
24	1	1
27	3	4
31	1	1
37	4	4

Weight gain strategies

Sample number	Original coding	Second coding
2	1	1
11	1	1
12	4	4
13	2	1
19	3	3
29	2	2
31	2	1
38	1	1
40	3	3
46	2	2

APPENDIX 7: Body Image and Weight Control Products Questionnaire

- This questionnaire is developed as part of my PhD research. The aims of this study are to examine young adults' attitudes towards their body images and the impact of sociocultural pressures on using weight control products.
- This questionnaire is not part of your university work. You will not gain or lose marks whether you decide to take part in this study or not.
- We are only interested in your view. There is no right or wrong answer.
- The questionnaire is divided into eight parts: -
 - Part 1: Body image
 - Part 2: Concerns about body image
 - Part 3: Changing weight behaviour
 - Part 4: The media's influence
 - Part 5: Parental influences
 - Part 6: Peer pressure
 - Part 7: The effects of advertisements
 - Part 8: Weight control products
- It will take about 30 minutes to complete this questionnaire.
- If you would like more information about this study, please do not hesitate to contact Kanokrat Luevorasirikul (Tel: 0115-951-5168 or Email: paxkl@nottingham.ac.uk)
- If you are interested in taking part in the interview, please do contact me through my e-mail.
- Your answers will be kept confidential.
- This research project has been approved by University of Nottingham Medical School Ethics Committee.
- Please send the completed questionnaire with envelope provided through internal mail.
- Thank you very much for reading this information.

Investigator

Kanokrat Luevorasirikul
Second year PhD Student
School of Pharmacy

Background information

Gender ☐ Male ☐ Female

Age Years

School

Part 1: Body image

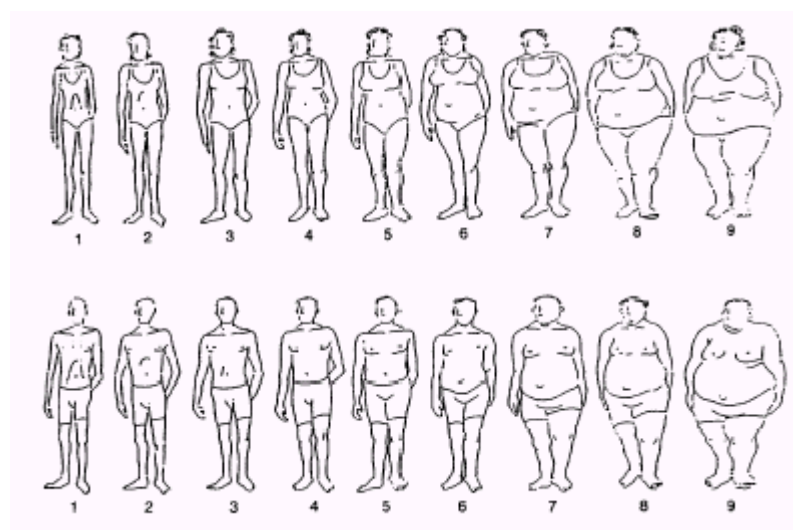
Please tick the box or circle the answer that best describes your own view

1. How do you feel about the way you look?

- ☐ Extremely satisfied
- ☐ Moderately satisfied
- ☐ Moderately dissatisfied
- ☐ Dissatisfied
- ☐ Extremely dissatisfied

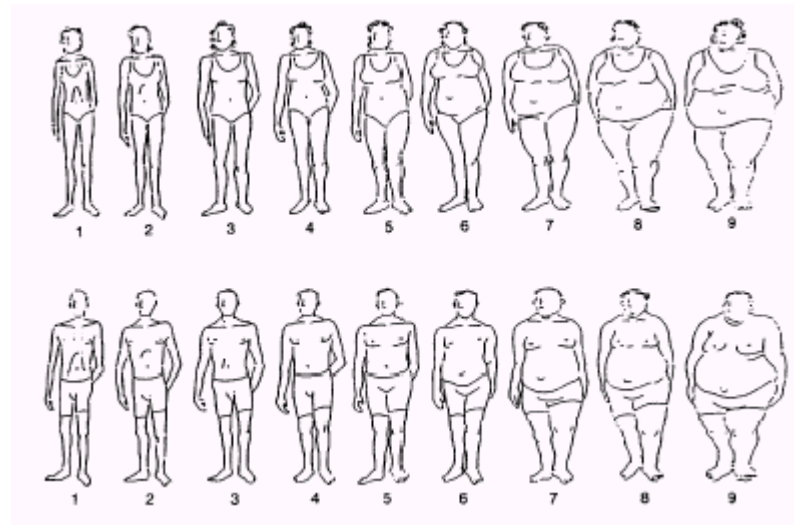
2. Which figure do you feel best represents your body image?

Please circle the number of the figure that best represents your body image



3. Which figure would you prefer your body to look like?

Please circle the number of the figure that matches your ideal body image



4. Which part of your body do you like the most?

- | | |
|-----------------------------------|--|
| <input type="checkbox"/> Hips | <input type="checkbox"/> Abdomen |
| <input type="checkbox"/> Hands | <input type="checkbox"/> Overall facial attractiveness |
| <input type="checkbox"/> Legs | <input type="checkbox"/> Chest/breasts |
| <input type="checkbox"/> Buttocks | <input type="checkbox"/> Arms |
| <input type="checkbox"/> Hair | |

5. Which part of your body would you like to change the most?

- | | |
|-----------------------------------|--|
| <input type="checkbox"/> Hips | <input type="checkbox"/> Abdomen |
| <input type="checkbox"/> Hands | <input type="checkbox"/> Overall facial attractiveness |
| <input type="checkbox"/> Legs | <input type="checkbox"/> Chest/breasts |
| <input type="checkbox"/> Buttocks | <input type="checkbox"/> Arms |
| <input type="checkbox"/> Hair | |

Part 2: Concerns about body image**Please tick the box which best describes your view**

Item	Rating Scale					
	Never	Rarely	Sometimes	Often	Very often	Always
1. You have been so worried about your shape that you felt you ought to control your diet						
2. You have thought that your thighs, hips, buttock, or stomach are too large in proportion to the rest of your body						
3. You have felt self-conscious about your shape when being with thin women/ muscular men						
4. You have noticed the shape of other women/ men and felt that your own shape compares unfavourably						
5. You have avoided wearing clothes which make you particularly aware of the shape of your body						
6. You have not gone out to social events because you have felt self-conscious about your shape						
7. You have been worried about other people seeing yourself fat/ less muscular						
8. You have felt bad about yourself when seeing your reflection in a mirror or shop window						

Part 3: Changing weight behaviour

Please tick in the box which is the closest to your experience

1. Have you ever tried any method to change weight?

☐ Yes

☐ No (please skip to part 4)

2. (If you have changed your weight at least once in your lifetime) When did you attempt to change weight?

☐ Slimming at the moment

☐ Within the previous 14 days

☐ Within the previous month

☐ Within the previous 3 months

☐ Within the previous 6 months

☐ More than 6 months ago

3. Which of the following method(s) did you include when you were last trying to change weight? (You can choose more than one answer)

☐ Changing your diet

☐ With supervision of a physician

☐ Increased exercise

☐ Other, please specify

4. Have you ever used weight control products before? (E.g. Adios™, Slim-fast™, Weider®)

☐ Yes

☐ No (please skip to part 4)

5. What result did you achieve after your last attempt to change weight?

☐ The desired weight loss/ gain

☐ Less weight change than expected

☐ None or almost no weight change

☐ Achieved the opposite result (e.g. gain weight instead of losing weight)

☐ The method was not completed

6. Was the achieved weight change maintained?

☐ Yes, it was maintained

☐ Gradually back to the normal weight

☐ Quickly back to the normal weight

Part 4: The Media's Influence

Instruction: Please choose the set of questions corresponding to your gender and tick in the box which best describes your view

Female's version

Item	Rating Scale				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Women who appear in TV shows and movies have the type of appearance that I see as my goal					
2. I believe that clothes look better on slim models					
3. Music videos that show thin women make me wish that I was thin					
4. I would like to look like the models in magazines					
5. I tend to compare my body to people in magazines and on TV					
6. In our society, fat people are regarded as unattractive					
7. Photographs of slim women make me wish I were thin					
8. Attractiveness is very important if you want to get ahead in our culture					
9. It is important for people to work hard on their figures/ physiques if they want to succeed in today's society					
10. People think that the slimmer you are, the better you look in clothes					
11. In today's society, it is important to always look attractive					
12. I wish I looked like a swimsuit model					
13. I often read magazines like Cosmopolitan, Vogue, and Glamour and compare my appearance to the models					

Male's Version

Item	Rating Scale				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Men who appear in TV shows and movies have the type of appearance that I see as my goal					
2. I believe that clothes look better on muscular men					
3. Music videos that show muscular men make me wish that I was muscular					
4. I would like to look like the muscular men who model clothing					
5. I tend to compare my body to people in magazines and on TV					
6. In our society, fat people are regarded as unattractive					
7. Photographs of muscular men make me wish I were muscular					
8. Attractiveness is very important if you want to get ahead in our culture					
9. It is important for people to work hard on their figures/ physiques if they want to succeed in today's society					
10. People think that the more muscular you are, the better you look in clothes					
11. In today's society, it is important to always look attractive					
12. I wish I looked like a body builder					
13. I often read magazines like Muscle & Fitness, Sports Illustrated, and GQ and compare my appearance to the male models in the magazines					

Part 5: Parental Influences

Please tick in the box which best describes your view

Item	Rating Scale				
	Never	A Little	Sometimes	A Lot	Always
1. In the past year, how often did your father make comments to you about your weight or your eating habits that made you feel bad?					
2. In the past year, how often did your mother make comments to you about your weight or your eating habits that made you feel bad?					
3. In the past year, how important has it been to your mother that you were slim?					
4. In the past year, how important has it been to your father that you were slim?					
5. Did your mother encourage you to lose weight/ become more muscular?					
6. Did your father encourage you to lose weight/ become more muscular?					

Part 6: Peer Pressure

Please circle the answer or tick the box which best describes your view

1 2 3 4 5
 Not at all A little Moderately Considerably Extensively

1. To what extent do your friend(s) influence you in the following topics:

- | | | | | | | |
|-----|--|---|---|---|---|---|
| 1.1 | Ideas of the perfect body | 1 | 2 | 3 | 4 | 5 |
| 1.2 | Weight loss products | 1 | 2 | 3 | 4 | 5 |
| 1.3 | Exercises to tone up | 1 | 2 | 3 | 4 | 5 |
| 1.4 | Ideas on how to get a perfect body | 1 | 2 | 3 | 4 | 5 |
| 1.5 | Diets to lose weight | 1 | 2 | 3 | 4 | 5 |

2. To what extent do your friends worry about their body images? 1 2 3 4 5

3. How often do you and your friends talk about weight, weight loss, weight gain, dieting, or exercising?

☐ Never ☐ Rarely ☐ Sometimes ☐ Quite frequently ☐ Almost everyday

4. How much pressure to be thin/ muscular do you feel from your friends?

☐ None ☐ Not much ☐ Fair amount ☐ Quite a lot ☐ A great deal

Part 7: The effects of advertisements

Please tick the box which the closest to your own view

1. Have you seen any advertising about bodybuilding or losing weight?

☐ Yes

☐ No

2. If yes, what source of media have you seen these advertisements?

☐ TV

☐ Magazines

☐ Internet

☐ Newspaper

☐ Other, please specify

3. Do you think advertisements influenced you to buy weight control products?

☐ Yes

☐ No

4. What type of advertisements did you see? (You can choose more than one)

☐ Dieting plan

☐ Dieting pills

☐ Meal replacements

☐ Nutritional supplements (e.g. protein supplement)

☐ Sports equipments

- ☐ Beauty products (e.g. slimming gel, lotion or patch)
- ☐ Other, please specify

5. When considering the content of those advertisements, what do you think is the main reason for buying these products?

- ☐ Price
- ☐ Customer testimonials
- ☐ Reliable evidence
- ☐ Famous presenters such as: celebrities
- ☐ Satisfactory results
- ☐ other, please specify

If you ever bought any weight control products before, please continue to the next part. If not, please leave it blank.

Thank you for taking time to complete this questionnaire.

Part 8: Weight control products

Instruction: Please answer these following questions regarding the last time you bought the product.

Please tick in the box which best describes your experience

1. Did it explain how the product purports to do?

☐ Yes

☐ No

2. Did it contain any of these ingredients?

○ Steroids

☐ Yes

☐ No

○ Ephedra or Ma Huang

☐ Yes

☐ No

3. As far as the risks of using weight control products are concerned, did it omit to inform of: -

3.1 consulting with a medical professional or pharmacist before using the product

☐ Yes

☐ No

3.2 customer warnings such as: side effects

☐ Yes

☐ No

4. Did it mention other strategies for helping to lose weight/ gain weight?
(You can answer more than one choice)

- | | | |
|----------------------------------|------------------------------|-----------------------------|
| ▪ Exercise | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ▪ Reduce calories from fat | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ▪ Eat more vegetables and fruits | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ▪ Adequate protein intake | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ▪ Other, please specify | | |

5. Did it mention any of these following statements: -

- | | | |
|--|------------------------------|-----------------------------|
| ○ Scientific evidence but no source of reference | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ○ Result from rigorous trials | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ○ Consumer testimonials | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ○ Before and after photographs | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ○ Staff credentials | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

6. Did the efficacy of the product claim to: -

Note: Please select weight gain or weight loss product as appropriate

Weight loss product

- | | | |
|---|------------------------------|-----------------------------|
| ▪ cause substantial weight loss | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ▪ cause rapid weight loss | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| ▪ show dieters cannot fail and can eat as much as they like and still lose weight | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

- cause permanent weight loss ☐ Yes ☐ No
- lose weight from specific body part ☐ Yes ☐ No
- block or absorb fat, carbohydrate or calories ☐ Yes ☐ No
- cause substantial weight loss by wearing on the body or rubbing into the skin ☐ Yes ☐ No

Weight gain product

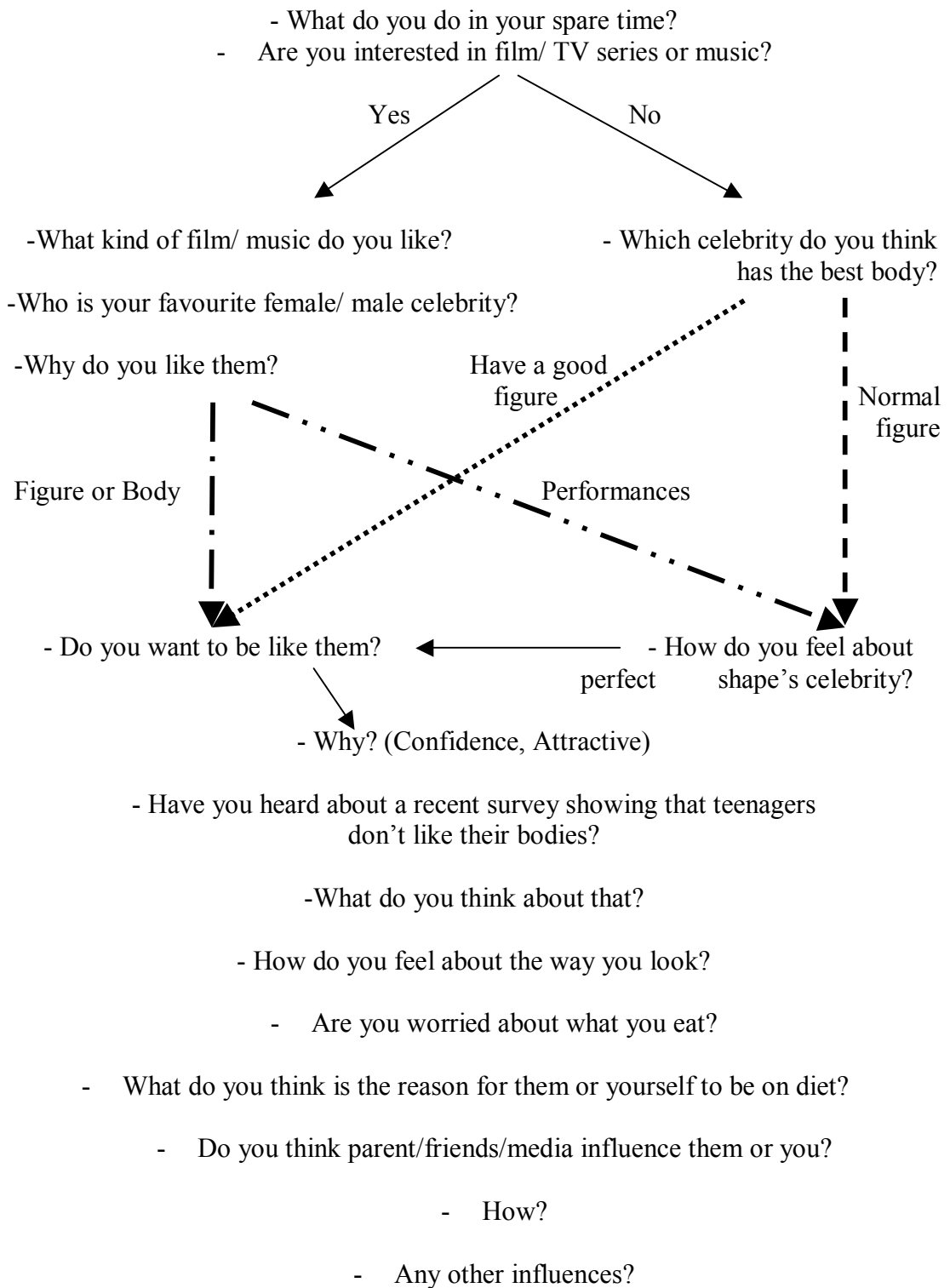
- boost testosterone levels ☐ Yes ☐ No
- build muscle or gain weight in very short time ☐ Yes ☐ No
- increase strength, muscle growth ☐ Yes ☐ No

7. Did it include: -

- recommend dosage ☐ Yes ☐ No
- cost ☐ Yes ☐ No
- duration ☐ Yes ☐ No

Thank you for taking time to complete this questionnaire

APPENDIX 8: An interview schedule for pilot study



- Have you ever tried any plans for changing your body?

Yes

No

-What method did you use?

Do you have any plan?

- How do you find information about weight loss or weight gain products?

- Have you ever seen any ads or pop-ups on the Internet about weight loss/gain products?

- Show participants some examples of weight loss/weight gain products websites (see Appendix 10)

- What do you think about these?

- Did they attract you to try?

- Have you ever tried a product?

Yes

No

- How was that?

- Did your friend or

- How long do you use this product?

relative use that?

- Have you consulted someone before using?

A Short Questionnaire before finishing the interview

Please relax and take a few minutes to put a tick (✓) or answer for the following questions: Question 1-3: Interview, Question 4-5: Internet, Question 6: Magazines and Question 7: Foods

1. How did you feel about this interview?

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stressed				Relaxed

2. Did you feel uncomfortable during this interview?

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Very Uncomfortable				Not at all

3. Do you think this interview is relevant to you or not?

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevant				Irrelevant

4. How often do you use the Internet?

<input type="checkbox"/> Frequently (> 20 hours/week)	<input type="checkbox"/> Moderately (10-20 hours/week)	<input type="checkbox"/> Rarely (<10 hours/week)
--	---	---

5. What kind of websites do you prefer? (You can choose more than one)

<input type="checkbox"/> Sport	<input type="checkbox"/> Chatting	<input type="checkbox"/> Buying stuff
<input type="checkbox"/> News/gossip	<input type="checkbox"/> Download music/film	
<input type="checkbox"/> Other		

6. What magazine(s) do you read most?

1.
2.
3.

7. What kinds of foods do you like most?

Please indicate

Do you have any other comments you would like to make about the interview or this topic? (Please write on the back of this page)

Thank you for participating in this interview

APPENDIX 9: Information sheet and consent form for body image study

INFORMATION SHEET

**University of Nottingham, School of Pharmacy
Centre for Pharmacy, Health, and Society,
University Park, Nottingham, NG7 2RD.**



Title of Project: Young Adults and Body Image

Name of Investigator: Kanokrat Luevorasirikul

Healthy Volunteer's Information Sheet

Healthy Volunteer's Information Sheet

You are being invited to take part in a research study. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part or not. *Thank you for reading this.*

What is the purpose of the study

During adolescence, body image is becoming a big concern. This may lead to the use of weight loss or weight gain products. Family, friends and the media can all affect how we feel about ourselves. It is important to understand young people's attitude towards body image and weight control products.

What does the study involve?

The study will involve an interview. You will be asked questions about the way you think about yourself, and what are the influences on your attitude and your opinion about weight control products. It should take no longer than 30 minutes. The interview will be tape-recorded, although you can ask us not to do this if you are unhappy about it. We will arrange the interview in the School of Pharmacy at a time that suits you during the normal University day.

Why have I been chosen?

You have been approached to take part in this research study because you are a first year undergraduate student at the University of Nottingham.

Do I have to take part?

It is up to you to decide whether to take part or not. If you do decide to take part you will keep this information sheet and you will be asked to sign a consent form. If you do decide to take part, you are still free to withdraw at any time and without giving a reason. This project is not part of your university work – you will not gain or lose marks if you take part or not.

What are the risks of taking part?

We do not think that this will be a bad experience for you. If you do not want to answer a question that we ask you, please do not be afraid to tell the interviewer. .

What are the benefits of taking part?

We hope that you will enjoy taking part in the study, although taking part in this study will have no immediate benefit to you. However, we hope that the information that we get from this study will help in promoting good information for young people about body image and weight control products. Ultimately this will help people to think carefully before deciding to use these products.

Will my information be kept confidential?

All information that is collected about you during the course of the research will be kept strictly confidential. Consent forms will be kept in a locked filing cabinet and only the University research team will have access to them. Any information about you that leaves the research unit will have your name removed from it so that you cannot be recognised from it.

What should I do if I want to complain?

If you wish to complain, or have any concerns about any respect of the way in which you have been approached or treated during this research study, please contact lecturer of Pharmacy Practice at the University of Nottingham. Paul Bissell (Tel: 0115-846-6248 Email: Paul.bissell@nottingham.ac.uk). If you are not satisfied with the explanations you have received you should then contact the Secretary to the Ethics Committee: Louise Sabir, Medical School Research Ethics Committee, c/o Division of Therapeutics and MM, D Floor, South Block, QMC, Nottingham, NG7 2UH.

What will happen to the results of the research study?

The results obtained during the research study will be analysed, written up and assessed as part of my PhD work. Some of the results may be published in professional journals but subjects will not be identified in any report or publication. A short report of the results will be sent to you after the study if you would like us to do this.

Who has reviewed the study?

This study has been reviewed and approved by the University of Nottingham Medical School Ethics Committee

Who should I contact for further information?

If you have any further questions, please contact Kanokrat Luevorasirikul, who is undertaking the research, or Nicola Gray, the project supervisor:

Kanokrat Luevorasirikul (2nd year PhD)/ Nicola Gray (Project Supervisor)
School of Pharmacy
University of Nottingham
University Park
Nottingham
NG7 2RD
Tel: 0115-951-5168, 0115-846-6382 (Nicola Gray)

Email: paxkl@nottingham.ac.uk or Nicola.gray@nottingham.ac.uk

If you decide to take part in this study

1. Please fill in and sign the consent form and return it to the interviewer.
2. Please keep this information sheet and a copy of the consent form for your own records.

Thank you again for reading this

CONSENT FORM

**University of Nottingham, School of Pharmacy
Centre for Pharmacy, Health, and Society
University Park, Nottingham, NG7 2RD**



**The University of
Nottingham**

Title of Project: Young Adults and Body Image

Name of Investigator: Kanokrat Luevorasirikul

Healthy Volunteer's Consent Form

Please read this form and sign it once the investigator has explained fully the aims and procedures of the study to you

- I voluntarily agree to take part in this study.
- I confirm that I have been given a full explanation by the above named investigator and that I have read and understand the information sheet (version 5: 30 July 2004) given to me.
- I have been given the opportunity to ask questions and discuss the study with the above investigator or their supervisor on all aspects of the study and I have understood the advice and information given as a result.
- I authorise the investigator to disclose the results of my participation in the study but not my name.
- I understand that information about me recorded during the study will be kept in a secure database. If data is transferred to others it will be made anonymous. Data will be kept for 10 years after the results of this study have been published.
- I understand that I can ask for further instructions or explanations at any time.
- I understand that I am free to withdraw from the study at any time, without having to give a reason for withdrawing. I understand that there will be no positive or negative effect on my University marks by taking part, or not taking part, in this study.

Name:

Email Address:

Telephone number:

Signature: **Date:**

I confirm that I have fully explained the purpose of the study and what is involved to:

I have given the above named a copy of this form together with the information sheet.

Investigator's Signature: **Name:**
Study Volunteer Number:

APPENDIX 10: Examples of weight control product websites

WEIGHT LOSS PRODUCTS

MiracleBurn: Burn Fat and Feel Great - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History

Address http://www.miracleburn.com/az/index2.htm Go Links

Y! Search Web Mail My Yahoo! Games Yahoo! Personals

MiracleBurn

Customer Service ORDER NOW Product Info 7-Day FREE Trial About Us

You have ABSOLUTELY NOTHING TO LOSE but the WEIGHT!

YES! We GUARANTEE you will BURN FAT and LOSE WEIGHT at the SAME TIME!

< Return to main page

The Miracleburn Formula has been studied for years. Here is why it is guaranteed to work safely & effectively...and why we offer a Trial To You FREE – because we know you will love it:

Start Yahoo... MSN... Nove... Mail... Docu... APP... Mir... Internet 17:55

Long Term Weight Loss affiliate - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History

Address http://ehealthy4u.com/?refid=searchfeed-19705 Go Links

Y! Search Web Mail My Yahoo! Games Yahoo! Personals

Longtermweightloss.com

This site is owned by Bryan Bulloch

ABOUT US REASONS TO ACT NOW WEIGHT LOSS MYTHS

START HERE!

Take Control of your Life. Get your FREE weight loss profile NOW!

USA

First Name:

Email:

Gender:

☐ Male ☐ Female

Height:

3 Ft 0 Inch.

We Can Help You Lose up to 15 lbs by 23rd of August

OUR TRACK RECORD SPEAKS FOR ITSELF!

Your Mentor

I will be guiding you to weight loss and health success. I am not an employee working for an hourly minimum but rather a customer just like you who has personally experienced the power of this program. Over the years I have tried

Done Internet 17:56

WEIGHT GAIN PRODUCTS

HC Muscle: HC Muscle: Pro Stack Bodybuilding Supplement System from Impact Nutrition - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History

Address http://www.hcmuscle.com/Ad/impactprostack_a.aspx Go Links

Y! Search Web Mail My Yahoo! Games Yahoo! Personals

Login :: Sign Up :: My Account :: Logout

HC MUSCLE .com

Toll Free Support: 1-888-577-4464
FREE Shipping on orders over \$300! FedEx Preferred Shipper

HOME :: ADVANCED SEARCH :: FREE SAMPLES :: YOUR CAR

Pro Stack Bodybuilding System
From Impact Nutrition™



- Complete Bodybuilding System designed for experienced bodybuilders!
- Ultra Easy to follow!
- Potent Alternative to Anabolic Steroids!
- Reports of up to 12 pounds of muscle mass in just 4 weeks!
- Includes 3 bottles of DermaGAIN™, Equi-Bolan™, GenEdge™, and Maxteron™
- Savings of \$340!
- Satisfaction Guaranteed!

Read More About Pro Stack Bodybuilding System...

ORDER NOW

SATISFACTION GUARANTEED LIFETIME

Done, but with errors on page.

Start Yahoo! MSN... Nove... Mail... Docu... APP... HC ... 17:57

Create supplements to help you build muscle fast - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History

Address http://www.creatamax.com/cmox_8000GL.html Go Links

Y! Search Web Mail My Yahoo! Games Yahoo! Personals

CREATAMAX.COM
Dedicated to achieving your physique and sporting goals

Free Weekly Newsletter
Click here now to subscribe

CREATAMAX 8000GL

What is it?
Creatine has become the number one selling supplement, along with protein powders. If you haven't tried it, you don't know what you're missing. Creatamax 8000GL is the creatine that got everyone talking, the IOC calling for it to be banned, got us accused of selling steroid-like products and doctors asking the government how is it allowed for something so effective for building muscle still legal?

What's in it?
Per 35g (one level scoop):
- Energy: 133kcal (566kJ)
- Protein: 11.2g
- Carbohydrate: 22.1g
- Fats: trace

Other active ingredients:
- Creatine Monohydrate (MAXPURE™): 5g
- L-Glutamine: 5g
- GAA: 1g

Home
What is Creatine
Creatamax research
The results you will see
How to use
Creatamax safety
Buy Creatamax now
Your Guarantee
Free Newsletter
TV Sponsees

Click here to visit

Downloading from site: http://www.creatamax.com/cmox_8000GL.html Internet

Start Yahoo! MSN... Nove... Mail... Docu... APP... Cre... 17:58

APPENDIX 11: A finalised version of the interview guideline

1. Leisure activities

- What do you do in your spare time?
- Are you interested in any film/movie/music?
- What kind of those things did you like?
- Anything else that you like to do?

2. Role models

- Who is your favourite male or female celebrity?
- Why do you like them?
- Do you think their perfect body images attract you?

3. Body image

- What do you think about young adults are more concerns about their bodies?
- How do you feel about the way you look?
- Is there anything you want to change about your body?
- Are you worried if someone says negative about your body?
- Are you worried about what you eat? Like control the amount of fat or calories

4. Changing body/weight strategies

- Any idea, what do celebrities do to make them look good?
- Have you tried any methods to change your body?
- What did you do?
- Why do you want to change?
- Have you ever tried any weight control products?
- Have you friends or family members ever tried any methods to change weight or body?
- What did they do?
- Did they success? / How was the outcome?

5. Sociocultural influences

- In your opinion, what is the most influence for you to be on diet or gain more muscle?
- How about other people at your age?

5.1 Friends influences

- How do you feel when your friends talked about weight and body shape?
- Is that makes you to change the way you look?
- Among your friends, did they mention about anything like weight control products or other topics related with weight and body like cosmetic surgery?
- What did your friends talk about that?

5.2 Family influences

- Did any member in your family push you to change the way you look?
- If yes, what did they do?
- If no, do you think parents still have a great impact on changing weight?

- In case one of your family members try any methods to change their weight
 - o What did they do?
 - o How was the result?
 - o Did that influence you to try?
 - o Did you try that method yourself?

5.3 Media influence

- What magazine do you read most?
- What is about?
- Inside magazine, are there any issues about how to change weight or appearance?
- Can you tell me more about what is about?
- Did you follow any of them?
- What do you think about the model in magazine?
- Did the model in magazine attract you to change the way you look?
- What do you think about fat celebrities?

6. Weight control advertisement

- Have you ever seen any advertisement or pop-up on the Internet about weight loss/weight gain products before?
- What was that?
- What do you think about that?
- What source of media did you find those advertisements apart from the Internet?
- Did they attract you to try?
- How can you find the information about weight control products?
- Which keywords did you put to search those products?
- Have you entered any of these sites before?
- Option 1: Talking about new methods to control weight like Atkins diet
 - o Have you ever heard it before?
 - o Have you tried it before?
 - o What do you think about the traditional way to control your weight?
- Option 2: If they or someone they know have tried any weight control products before
 - o Do you or they consult anybody before using?
 - o How long does it take to see the outcome?
 - o Are they or you still using it?
 - o Any unexpected effects?

APPENDIX 12: An interview guideline for the interviews with pharmacists

Pharmacists' views about weight control strategies

1. What do you think about implementing weight management service in community pharmacy?
2. What do you think about fad diets e.g. Atkins, GI diet?
3. What is your opinion about weight loss and weight gain products?

Pharmacists' advice on weight control strategies

1. What advice or services can pharmacists offer for customers who want to lose weight?
2. Are there any customers who ask for advice on OTC weight control products?
3. Have you been asked about other strategies for losing weight such as weight loss programme and detox?
4. Do you have any interventions to support overweight people to lose weight?
If so, could you please describe what services are being offered to them?
Do you have any difficulties running this service? If yes, what are they?
What are the benefits of running this service?
Are there any other health professionals or members of local community involved?
5. Do you think pharmacists should be responsible for running this service?

Strategies for tackling obesity and promoting healthy lifestyles

1. Do you have any plans or strategies for tackling obesity?
Or do you have any other plans or changes to the programme?
If so, what are they?
How was the plan so far?
Do you have any concerns about implementing this plan?
2. Do you have any plan to promote healthy lifestyle?
If so, what are they?
Is there involvement with the local community?
How was the result so far?
3. What else do you think pharmacists should be doing in terms of promoting healthy lifestyles and preventing obesity?

APPENDIX 13: An original article in press with Health Education Research

Title: Developing a Consumer Evaluation Tool of Weight Control Strategy Advertisements on the Internet

Luevorasirikul K; Gray NJ; Anderson CW

Division of Social Research in Medicines and Health, School of Pharmacy,
University of Nottingham NG7 2RD, England, UK

Running title: evaluation tool of weight control advertisements

Word counts: Abstract (200 words) and main body text (2,786 words)

Keywords: Advertising; Weight loss agents; Weight gain agents; Internet; Health promotion

Abstract

Objective: To develop two evaluation tools for weight loss and weight gain advertisements on the Internet, in order to help consumers to evaluate the quality of information within these advertisements.

Methods: One hundred websites identified by Internet search engines for weight loss and weight gain strategies (50 websites each) were evaluated using two specific scoring instruments, developed by adapting questions from the “DISCERN” tool and reviewing all related weight control guidelines and advertising regulations. The validity and reliability of the adapted tools were tested.

Results: Our evaluation tools rated the information from most websites as poor quality (70%). In the case of weight loss strategies, statements about rapid (18%) and permanent (28%) weight loss caused concern, as well as lack of sensible advice about dieting and a lack of product warnings (84%). Safety concerns relating to weight gain products were the lack of warnings about side effects in products containing steroids and creatine (92%). The adapted tools exhibited acceptable validity and reliability.

Conclusion: Quality of information within weight control advertisements on the Internet was generally poor. Problems of false claims, little advice on healthy ways to modify weight, and few warnings on side effects have been highlighted in this study.

Introduction

The media serve as powerful transmitters of body image ideals which are slimness for women and muscularity for men [1]. Consequently, women perceive themselves too fat and want to lose weight, whereas men consider themselves too thin and want to gain weight or build more muscle [2]. It has been suggested that the pursuit of a healthy lifestyle, such as sensible eating and increasing exercise, is required for people who want to lose fat and/or gain muscle. However, consumers need to maintain these changes for extended periods of time. Therefore, a number of weight control products and programs are becoming the option for those who want a fast result [3]. It has been reported that, in 2000, the US population spent almost \$35 billion on weight loss products and programs [4]. When considering weight control strategies, advertisements play an important role in informing consumers about products or programs. Evidence has shown that most consumers select products based on information provided within advertisements [3]. However, other studies found that advertisements on weight loss products may often be imprecise and ambiguous [5].

It is evident that the Internet is becoming a key source of health and wellness information. For example, an online survey found that “diet, vitamin and nutritional supplements” was the third most popular health topic sought on the Internet [6]. A study of Internet users in Germany, France, the US and Japan showed that most of the Internet users perceived online health information to be of high quality [7]. It is also apparent that consumers are seeking health products, as well as information, from online suppliers. A survey of 1,000 US adults found that around 20% reported purchasing OTC (Over-The-Counter) medicines and prescription drugs on the

Internet [8]. In relation to weight change strategies, a recent survey of more than two million US online consumers showed that more than 60% searched for information about weight loss diets and programs on the Internet, whereas around 50% used offline resources [9]. This study also found that more than 40% of the users reported being satisfied with the weight loss websites, and almost three-quarters reported that these websites had a great impact on increasing their compliance with a weight loss program.

In the case of weight loss products, a study by Bimal *et al.* showed that online advertisements failed to inform consumers about side effects and the recommended dosage, and contained inappropriate statements that were not in accordance with government standards [10]. More specifically, the British Advertising Standards Authority (ASA) addressed two main problems of slimming advertisements in printed publications, which were “miracle claims” and “exaggerated claims and guarantees” [11]. Similarly, a report published by the US Federal Trade Commission (FTC) showed that “testimonials”, “fast results”, and “guaranteed results” were the most commonly-made claims in weight-loss advertising [4].

Although the problems of weight gain advertisements have not been well-researched, Philen’s survey regarding nutritional supplement advertisements in health and bodybuilding magazines showed that most products used claims like “muscle growth” or “enhanced strength” (59%) but did not contain any side effect warnings (90%) [12]. Moreover, a survey by ASA found that many bodybuilding product advertisements used some claims without any scientific proof, as well as the use of “before and after” pictures [13].

In 2004, the Department of Health for England and Wales launched a three-year plan for improving quality of information: one of the main strategies is to empower people by enhancing their skills in evaluating health information [14]. To our knowledge, resources about evaluating Internet information are mostly found in the form of criteria or guidelines. We realized that using these resources to justify the quality of websites expends time, money and effort. Therefore, we developed tools which are user-friendly and could be available for consumers to use online. At present a number of evaluation tools have been developed for helping consumers to rate the quality of health information on the Internet; however none has been created and tested for specific topics or products [15].

The main aim of this study was to develop tools for evaluating the quality of online weight loss and weight gain advertisements, in order to enable consumers to gauge the reliability of promotional information about weight control products, and to explore the problems of misleading advertisements on the Internet.

Methods

Evaluation tools

In the first stage of development, we adapted questions from the DISCERN tool [16]. The DISCERN tool was originally developed to help consumers to evaluate the quality of information about treatment choices in print publications. The tool provided a summary score rating the quality from 1(low) to 5 (high). Our aim was to create a short tool specific to weight control products and strategies; we selected questions about mode of action, benefits and risks of the product, areas of uncertainty and an overall rating of the quality of information from the original tool. We used

current UK regulations and US guidelines for advertising of weight control products to develop questions about misleading information, which included seven types of weight loss claims and three types of weight gain claims [4,11,13]. We labelled these claims as “problematic” because we were concerned that these claims may mislead consumers about the efficacy of the product. Moreover, we incorporated sections about safety of the product, scientific proof, useful information and instructions for consumer. This resulted in two evaluation tools- one for weight loss and one for weight gain products. Both tools contain three pages consisting of nine areas of concerns (Table 1). Supplementary questions were added to seven of nine sections, which aimed to clarify the main aim of each section for the consumer and to enhance the consistency and simplicity of the scoring system. An example of a question about the risks of a product can be seen in Table 2.

Table 1 The nine dimensions of interest covered in the evaluation tools

Mode of action	Whether the website explains how the product works
Benefits	Whether the website explains the consequences of being overweight or underweight
Safety	Whether the product contains any harmful ingredients
Risks	Whether the website includes information about side effects, or customer warnings
Useful information	Whether the website suggests other strategies for helping to lose or gain weight
Scientific proof	Whether the website shows results from rigorous trials; consumer testimonials
Misleading information	Whether the website contains any extravagant claims
Areas of uncertainty	Whether the website provides consumers with other choices
Instructions for consumer	Whether the website includes information about dosage, cost, and duration of use

Table 2 Example of a rating question from the tool for weight loss strategy

Does it describe the risks of this product?

1. To consult with medical professional in specific people

☐ Yes ☐ No ☐ Not Applicable

2. To provide consumer warning

☐ Yes ☐ No ☐ Not Applicable

3. That a user should not lose more than 2lbs per week

☐ Yes ☐ No ☐ Not Applicable

4. That Very-Low-Calorie-Diet should be used for less than 4 weeks

☐ Yes ☐ No ☐ Not Applicable

5. Any side effects e.g. dizziness, interrupt menstrual cycle and hair loss

☐ Yes ☐ No ☐ Not Applicable

Rating the question

All No			All Yes		
0	1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Regarding the safety of weight change products, the questions about some harmful ingredients that might be contained in the product were included in this section (Table 3). Studies have shown that these ingredients could have detrimental effects on human health. For instance, Ephedra (or Ma Huang), commonly found in weight loss products, can increase blood pressure and increase risk for stroke [17]. Bodybuilding products containing creatine can cause renal damage [18].

Table 3 Harmful ingredients found in weight change products

Weight loss products	Ephedra or Ma Huang; Chromium Picolinate; Triiodothyroacetic acid; Dinitrophenols; Aristolochic acids
Weight gain products	Steroids; Gamma-hydroxy-butyrate; 1,4-butanediol; Creatine; Ephedra

The Website Sample

Key words and phrases, like “dieting” and “build muscle” that might be used by consumers were generated by discussion among the research team to simulate searching for websites related to weight loss and weight gain products (Table 4). All the keywords were put into the most popular search engines among adolescents (YahooTM (<http://www.yahoo.com> and <http://www.yahoo.co.uk>), GoogleTM (<http://www.google.com> and <http://www.google.co.uk>) and Ask JeevesTM (<http://www.ask.com> and <http://www.ask.co.uk>)) [19]. Only the first ten websites appearing in the first page of results for each key word / phrase were selected resulting in a total of 540 websites for weight loss products and 360 websites for weight gain products. Then websites which contained the same product, were duplicate, were non-functioning or only provided information about weight loss but listed no product or program were excluded from the sample. The remainder were then grouped by the results from each of the six search engines. Eight to nine websites were purposively selected from each search engine in order to generate a sample of 100 websites to represent wide varieties of weight change products (50 for weight loss and 50 for weight gain products). It should be noted that “website” in this context was equivalent to “advertisement” in the printed media, although it is recognized that some websites might present themselves as “advertorials”, which

include information which may be purely promotional or an effort to describe evidence for use of the product or strategy.

Table 4 List of key terms used in search engines

Weight loss strategy	Dieting; diet pills; diet products; slimming; slimming aid; slimming products; stay in shape; weight loss; and weight loss products
Weight gain strategy	Body building products; build muscle; gain weight; gain weight products; increase muscle; and muscularity

Scoring system

There were two coders in this study. The main coding was performed by KL and the second coding for the inter-coder reliability test was performed by another researcher. The generated sample of websites was analysed using scoring tools designed for each type of strategy (weight loss or weight gain). A product from each website was used for analysis of the quality of the website. In the case of websites containing more than one product, only one product was purposively selected that represented the range of products on that website.

The tools were developed to evaluate the overall quality of content on websites by totalling a rating score from all nine sections. Sections 3-9 comprised a set of supplementary questions and an overall rating scale. In sections with more than one question, each supplementary question was completed by answering either “yes”, “no” or “not applicable”. At the end of each section, the “yes” or “no” responses were totalled to give a score for that section. Based on the total score from each section, the final rating for overall quality of websites was ranked as “low”,

“moderate” or “high” as illustrated in Box 1. It should be noted that the approximate time used for evaluating each website was five minutes.

Box 1 How to rate a final score from scores from each section

For weight loss product				
Low				High
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
≤ 9	10-16	17-22	23-28	≥29
For weight gain product				
Low				High
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
≤ 8	9-12	13-16	17-20	≥21

Validity and reliability assessment

To assess validity of the tools, content validity was assessed by piloting the instrument on a small number of websites and refining through iterative discussion within the research team coupled with the reflection process within the research team before the main study. Moreover, the researcher reviewed and compared the questions about misleading claims to the standard criteria for advertising weight change products (the British advertising codes [11,13] and the US guidelines [4] for weight change strategies) in order to ensure that all the plausible claims that might have been found in weight change advertisements were covered.

In order to test the reliability of the instruments, two reliability tests were performed by using Spearman’s rho: inter-coder reliability and test-retest reliability. A Spearman’s rho ≥ 0.7 is considered good reliability [20]. For inter-coder reliability,

ten websites were randomly selected for a second researcher to test using the tools and then the results from both users were compared and tested. The results for inter-coder reliability showed that Spearman's rho for weight loss strategies was 0.730 and for weight gain strategies was 0.722.

After one month, twelve websites were selected to retest the reliability of the tools. It is acknowledged that the transient nature of websites could be problematic, and some websites had undergone changes which will be commented upon later, but most were in the same form. Most of the re-test sample websites were drawn at random; however, a few were purposively selected to ensure the sample included ingredients where there was particular concern. Spearman's rho was used to test the reliability by comparing the total scores from the original scores and the retest scores. When retested with a sample of twelve websites, Spearman's rho for the weight loss tool was 0.847 and for the weight gain tool was 0.936. Therefore, the results from both reliability tests were acceptable to us at this stage of development.

Results

Our sampled websites were grouped into three different types of websites: retail website (offers a variety of products); company website (offers their own brand product); and personal website (offers personalised weight change program). Overall, our websites provided poor to moderate quality of information, as shown in Figure 1. It should be noted that none of the websites merited a maximum score of five. In terms of types of products or programs found in our websites, most weight loss strategy websites (56%) were for slimming pills and most weight gain strategy websites (38%) were for nutritional supplements containing creatine, chromium,

amino acids or vitamins and minerals. Seven types of false claims were found in slimming product websites (see Figure 2). The most frequent problematic claim was “rapid weight loss” (28%), followed by “permanent weight loss” (18%) and “block fat and carbohydrate” (18%). Conversely, in weight gain strategies, 50% of the websites used claims like “increasing strength” or “muscle growth” (see Figure 3). Moreover, 40% of them included results from studies but gave no reference sources. Furthermore, there was a lack of product warnings: only 16% of weight loss products and 8% of products containing steroids and creatine carried product warnings.

Figure 1 Quality rating of weight loss and weight gain Websites using the adapted DISCERN tools (n=50 for each strategy) (“Maximum Possible Quality Score = 5”)

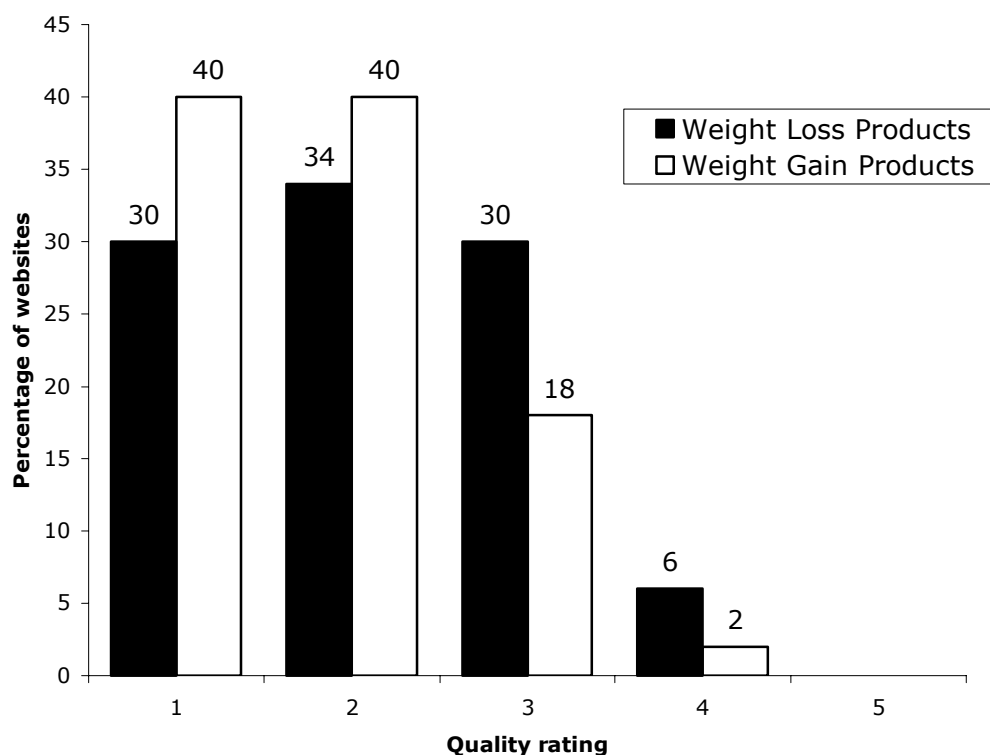


Figure 2 Characteristics of weight loss product claims on Websites (n=50)

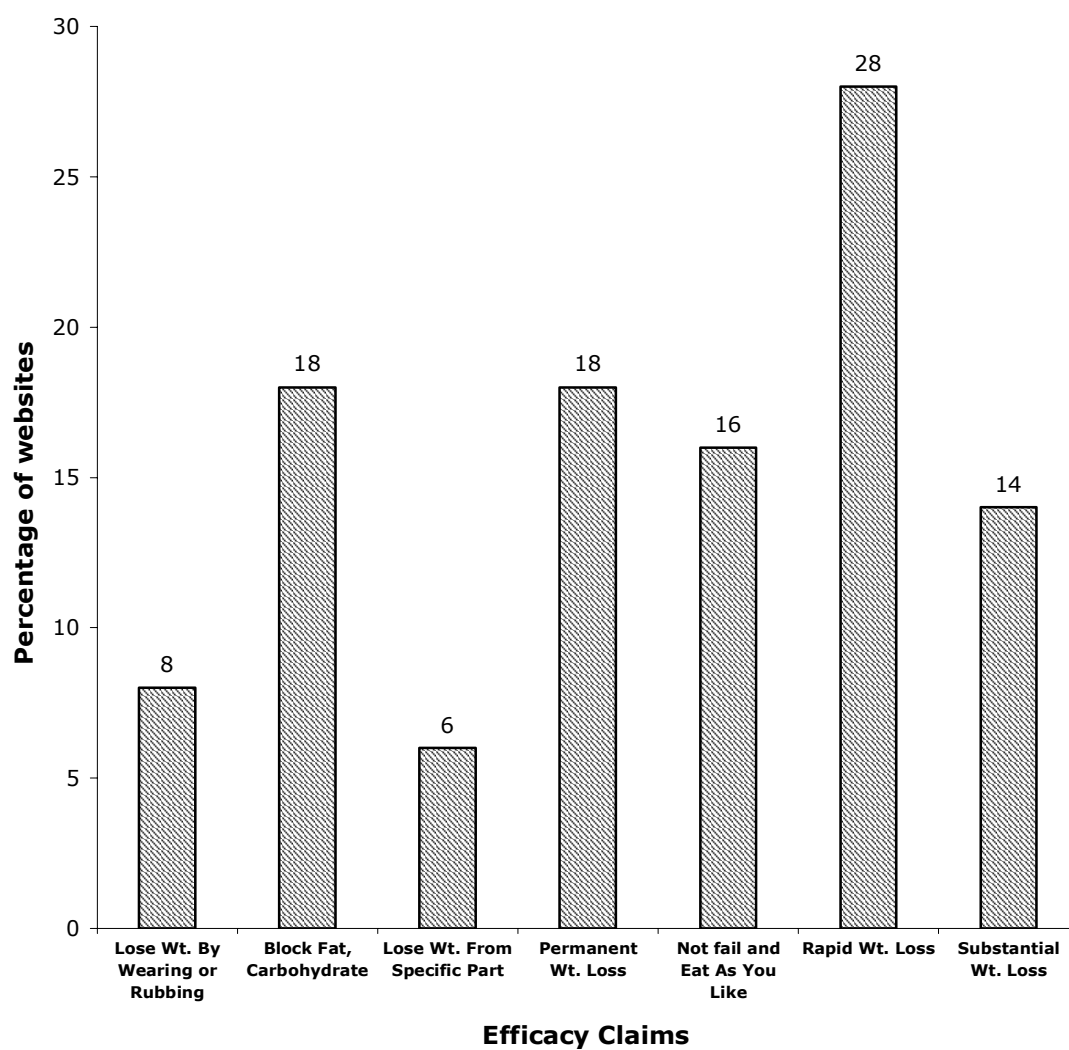
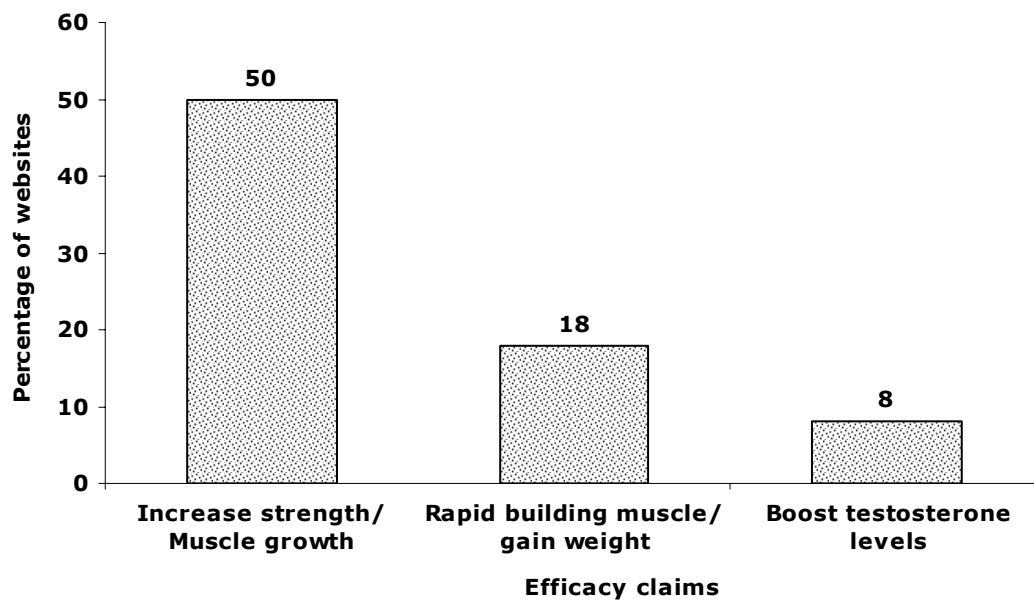


Figure 3 Problematic claims on weight gain websites (n=50)



Discussion

Our findings show that the majority of weight control products' websites contained poor quality information, particularly inappropriate statements concerning efficacy claims for the products. As far as existing evaluation tools are concerned, our instruments were specifically designed for consumers who search for weight loss or weight gain strategies. Furthermore, each section in our tools included supplementary questions which intentionally aimed to help consumers decide whether the website had provided enough information or not. Our tools exhibited reasonable reliability and validity at this stage of development. According to the keywords used for searching websites, our samples included a wide range of products and programs claiming to help people to lose weight or gain muscle.

Our study has several limitations. We did not have any major difficulty using these evaluation tools to analyse the content of advertisements. However, we found that

some questions had areas of uncertainty and there was inconsistency when rating scores for this question. When we retested our tool, we found that some websites did change their product ingredients, as we presumed that distributors may have become aware of selling products containing prohibited substances such as ephedrine and steroids. Finally, we only chose one product to represent each website reviewed. It is possible that the product we selected was not representative of the website: selecting a different product may have resulted in a different rating score.

When comparing our findings with several related studies, similar themes emerged. In the case of false claims, “fast results” was the most commonly found claim in our weight loss websites, which was similar to the finding from a Federal Trade Commission report [4]. In case of body building advertisements, our results were consistent with a previous study in many aspects: the most frequently mentioned ingredients; the most claims; and a lack of steroid products warning were common [10]. Moreover, our findings lead us to agree that advertisers should inform consumers more about advice on dieting, provide product warnings, and provide contradictory evidence as outlined in Mason’s article, the British ASA survey, and Miles’ study [5,11,21].

Although there are legitimate guidelines regarding the advertising of weight loss and weight gain strategies, there are still a number of complaints about problematic claims made for these products and programs [22]. Regulation of these advertisements is very difficult in practice: sites change regularly and globalisation of the Internet makes any kind of meaningful sanction almost impossible [23]. The DISCERN tool was developed in order to help the public evaluate the quality of

health information, and our work builds upon this. By raising public awareness of these issues, and the availability of specific tools that can help them, consumers should be better able to evaluate the quality and safety of online information about weight control strategies. We were also concerned that during the first use of the tools, consumers may find that our instruments are difficult to use and time-consuming. However, we believe that consumers will gain benefits from using our tools by learning and developing skills to justify whether information within advertisements is good or bad without using the instruments. Moreover, in order to enhance the accessibility of our tools, we plan to disseminate the instruments by making them widely available on the Internet and checking their inclusion in the results of simulated search engine exercises. Recent controversy over new UK guidelines from the National Institute for Health and Clinical Excellence regarding obesity, which includes a recommendation for obese adolescents to have access to stomach stapling surgery in extreme circumstances, highlights the importance of these issues and the timeliness of this study [24]. Renewed media attention may prompt more people, including more adolescents, to seek information on this topic.

We are reporting the initial development of these tools, and interesting preliminary findings in simulated searches that might be of concern to health care consumers, practitioners and policymakers/regulators. The next stage of development should examine the practicality of our tools when being used by consumers who are interested in purchasing weight change products. This will enable a researcher to understand the problems, which might arise from using these tools, and to adjust the contents of questions to become more approachable and suitable for people across different age groups.

Acknowledgements

We would like to thank Dr. Helen Boardman and our colleagues in the Division of Social Research in Medicines and Health at the University of Nottingham for their support with this study.

The completed evaluation tools for weight loss and weight gain products are available at www.nottingham.ac.uk/csrhhc

References

1. Xie B, Liu C, Chou CP *et al.* Weight perception and psychological factors in Chinese adolescents. *J Adolesc Health* 2003; **33**(3): 202-10.
2. Stanford JN, McCabe MP. Body image ideal among males and females: Sociocultural influences and focus on different body parts. *J Health Psychol* 2002; **7**(6): 675-84.
3. Blanck HM, Khan LK, Serdula MK. Use of non-prescription weight loss products: Results from a multistate survey. *JAMA* 2001; **286**: 930-35.
4. The Federal Trade Commission. "Reports: 2002" *Weight-loss advertising: An analysis of current trends*. Available at: <http://www.ftc.gov/bcp/reports/weightloss.pdf>. Accessed: 21 May 2006.
5. Mason P. OTC weight control products. *Pharm J* 2002; **269**: 103-5.
6. Pew internet and American life project. *Online health search 2006*. Available at: http://www.pewinternet.org/pdfs/PIP_Online_Health_2006.pdf. Accessed: 16 November 2006.
7. Harris Interactive. *4-country survey finds most cyberchondriacs believe online health care information is trustworthy, easy to find and understand*. Available at: <http://www.harrisinteractive.com/news/allnewsbydate.asp?NewsID=464>. Accessed: 19 November 2006.
8. Burns E. *Shoppers shift to online*. Available at: <http://www.clickz.com/showPage.html?page=3564781>. Accessed: 19 November 2006.
9. ComScore Networks. *Press release: Sixty percent of consumers researching weight loss use the Internet, seeking information on weight loss programs, diets and medications*. Available at: <http://www.comscore.com/press/release.asp?id=997>. Accessed: 16 November 2006.
10. Bimal H, Ashar MD, Redonda GM *et al.* A critical evaluation of internet marketing of products that contain ephedra. *Mayo Clin Proc* 2003; **78**: 944-46.

11. The Advertising Standards Authority. *A survey of slimming advertisements*. Available at: http://www.asa.org.uk/NR/rdonlyres/D4040C0F-103F-4C09-986D-9F5CFEABEE8B/0/ASA_Slimming_Report_Mar_1995.pdf. Accessed: 21 May 2006.
12. Philen RM, Ortiz DI, Auerbach SB, *et al*. Survey of advertising for nutritional supplements in health and bodybuilding magazines. *JAMA* 1992; **268**(8): 1008-11.
13. The Advertising Standards Authority. "*Search: Bodybuilding*" *General: ASA flexes its muscles*. Available at: <http://www.asa.org.uk/asa/news/news/2004/ASA+flexes+its+muscles.htm>. Accessed: 21 May 2006.
14. Department of Health. *Better information, better choices, better health: Putting information at the centre of health*. Available at: <http://www.dh.gov.uk/assetRoot/04/09/85/99/04098599.pdf>. Accessed: 21 May 2006.
15. Wilson P. How to find the good and avoid the bad or ugly: a short guide to tools for rating quality of health information on the internet. *BMJ* 2002; **324**: 598-602.
16. Shepperd S, Charnock D. University of Oxford. *The DISCERN Instrument*. Available at: <http://www.discern.org.uk/discern.pdf>. Accessed: 21 May 2006.
17. Dwyer JT, Allison DB. Dietary supplement in weight reduction. *J Am Diet Assoc* 2005; **105**: S80-6.
18. Pritchard N, Kalra P. Renal dysfunction accompanying oral creatine supplements. *Lancet* 1998; **351**: 1252-3.
19. Gray NJ, Klein JD, Cantrill JA *et al*. "*How do you spell 'Gonorrhea'?*" *Adolescents' health literacy and the Internet*. Poster presented at the Annual Meeting of the Academy for Health Services Research and Health Policy; 2002 Jun 23-25; Washington DC, USA.
20. Litwin MS. *How to measure survey reliability and validity: Volume 7 of the survey kit*. Thousand oaks, California: Sage publications, 1995:8-13.
21. Miles J, Petrie C, Steel M. Slimming on the internet. *J R Soc Med* 2000; **93**: 254-7.
22. The Federal Trade Commission. "*Do the right thing*" (*apologies to Spike Lee*). Available at: <http://www.ftc.gov/speeches/muris/030211rightthing.htm>. Accessed: 21 May 2006.
23. Theodosiou L, Green J. Emerging challenges in using health information from the Internet. *Adv Psychiatr Treat* 2003; **9**(5): 387-96.
24. National Institute for Healthcare and Clinical Excellence. Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children. NICE, December 2006. Available at: <http://www.nice.org.uk/guidance/CG43>. Accessed: 14 December 2006.